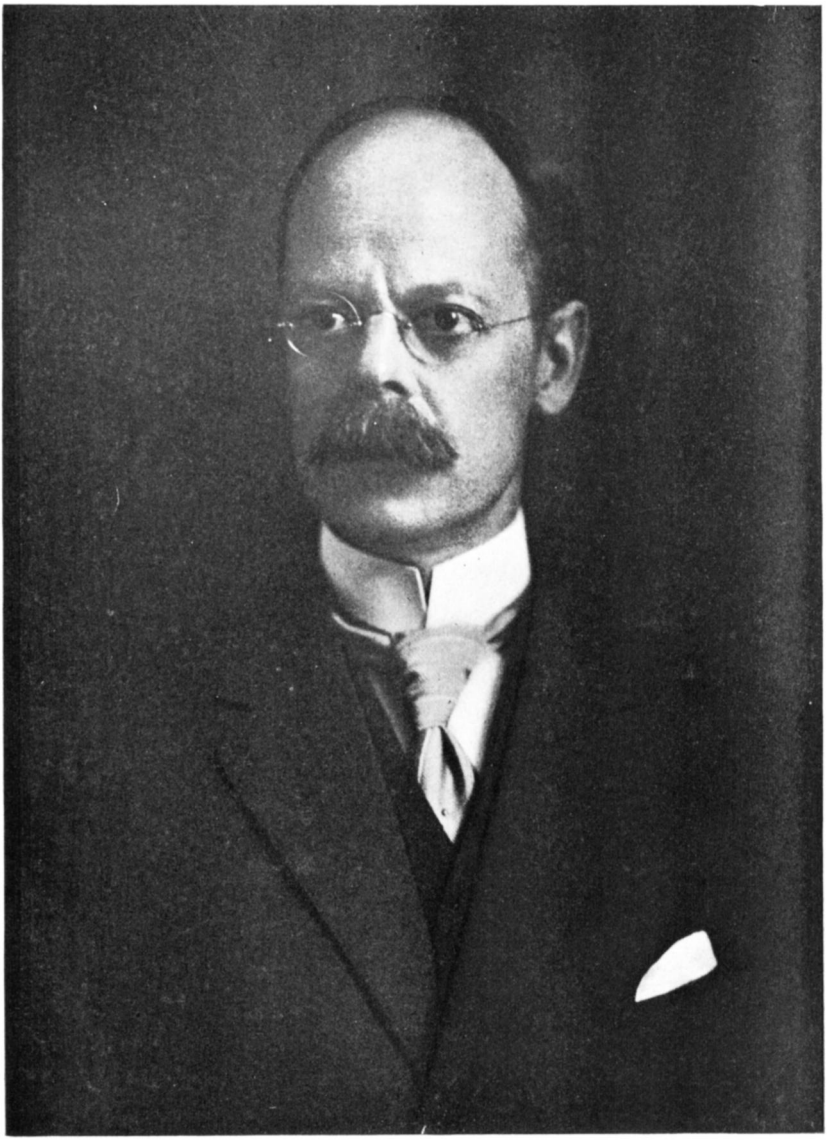


LEONARD METCALF, PRESIDENT 1916-1917

JOURNAL

OF THE

AMERICAN WATER WORKS ASSOCIATION

The Association is not responsible, as a body, for the facts and opinions advanced in any of the papers or discussions published in its proceedings.

VOL. 3 SEPTEMBER, 1916 No. 3

PROCEEDINGS THIRTY-SIXTH ANNUAL CONVENTION, AMERICAN WATER WORKS ASSOCIATION

The Thirty-Sixth Annual Convention of the American Water Works Association was held at the Hotel Astor, New York City, June 5–9, 1916, Mr. Nicholas S. Hill, Jr., of New York City, presiding.

FIRST SESSION, TUESDAY MORNING, JUNE 5, 1916

The Convention was called to order at ten o'clock a.m. by the President.

The reading of the minutes of the last convention, which had been printed in the JOURNAL, was dispensed with; and the registration of members present in the office of the secretary was made the roll of members present.

Registration

Active and Corporate members	416
Associate members and representatives	222
Ladies and guests	460
Total registration	1098

Of the guests registered 51 were from New York City, including Brooklyn and other boroughs.

REPORT OF CANVASSING COMMITTEE

The committee appointed to canvass the ballots for the election of officers for the ensuing year reported 386 votes cast for President, 381 votes cast for Vice-President, and 381 for Treasurer, all of which were cast respectively for Leonard Metcalf for President, Theodore A. Leisen for Vice-President and James M. Caird for Treasurer. For Trustees 705 votes were cast, of which F. W. Cappelen and M. L. Worrell received the highest number. The above mentioned were therefore declared elected to the respective offices for the ensuing year.

REPORTS OF STANDING COMMITTEES

FINANCE COMMITTEE

To the American Water Works Association:

Your Finance Committee respectfully report as follows:

We have audited the books of the Secretary and the Treasurer, and find them correct. We have examined and verified the vouchers.

There was on hand at the beginning of the fiscal year

April 1, 1915	$ 4,268.15	
There was received from the secretary	11,060.99	
Making a total of		$15,329.14
There has been disbursed and paid, by vouchers duly authorized and audited by the finance committee, for general operations of the association	$8,131.68	
There has been invested in the permanent fund	4,072.50	12,204.18
Leaving a balance in bank to the credit of the association of		$ 3,124.96

We have certificate showing deposit of this money to the credit of the Association in the Troy Trust Company.

There are now in the hands of the Treasurer, in accordance with authority granted to the Finance Committee by the Executive Committee, municipal bonds of par value $4000; $2000, 5 per cent Mercer County, West Virginia, bonds; and $2000, 5 per cent Dominion of Canada bonds.

This marks the beginning of a new financial era in the history of the American Water Works Association; and it is hoped that subsequent additions may be made to the Permanent Fund of the Association from year to year, thus making it possible for it to broaden its activities in the service of water works men.

You will find in the detailed report of the Secretary the items or headings under which the various disbursements of the Association have been made during the past fiscal year. It is gratifying to note that all of the committees have kept safely within the budget allowances, made at the beginning of the fiscal year.

Your committee recommends that the system of making an annual budget, inaugurated last year, be continued, and that the following amounts be appropriated from the receipts of the current fiscal year for the conduct of the business of the Association, viz.:

Budget recommended for 1916–1917

(1) Convention	$700
(2) Office expense and postage	700
(3) Election	75
(4) Committees	400
(5) Sections	500
(6) Office equipment	50
(7) Insurance	50
(8) Rent	120
(9) Salary of secretary and editor	1800
(10) Printing, distribution and all other charges incurred in publishing the Association JOURNAL, except salary of editor.	5000
(11) Contingent	500
	$9895

Your committee acknowledges with pleasure the hearty coöperation of the Secretary and other officers of the Association in the successful introduction of the budget system

Respectfully submitted:

H. E. KEELER, *Chairman,*
HOWARD A. DILL,
HENRY B. MORGAN,
Committee.

Without objection, the report was received and the recommendations concurred in.

TREASURER'S REPORT

TROY, N. Y., April 1, 1916.

Mr. H. E. Keeler, Chairman Finance Committee, The American Water Works Association, Chicago, Ill.

Dear Sir: Permit me to submit my report as Treasurer of the American Water Works Association for the year ending March 31, 1916.

The funds of the Association are on deposit with the Troy Trust Company, Troy, N. Y., as per the order of the Executive Committee.

The receipts during the year were as follows:

Balance, April 1, 1915	$4,268.15
Received from J. M. Diven, Secretary	10,876.83
Interest on bank deposits	134.16
Interest on investments	50.00
Total	$15,329.14
Disbursements:	
Cancelled checks and collection charges	12,204.18
Balance, April 1, 1916	$3,124.96

The interest on the daily bank balance during the year was $134.16, which was $45.59 more than during the previous uear.

Attached you will find certificate of the Troy Trust Company, showing a deposit of $3,189.86 at the close of business on March 31, 1916. From this balance there should be deducted the following unreturned checks:

Deposit as per certificate		$3,189.86
Unreturned checks:		
V640-ck 807 Edward Bartow	$53.10	
V637-ck 808 Williams & Wilkins	11.80	64.90
Balance		$3,124.96

The cancelled checks and receipted vouchers with the book of the Treasurer are submitted for audit.

During the year Mercer County, W. Va., road bonds of the par value of $2000 were purchased for the Permanent Fund and are in the hands of the Treasurer.

There was also purchased Government of the Dominion of Canada bonds of the par value of $2000. At the present time these bonds have not been turned over to the Treasurer.

When the last mentioned bonds are received by the Treasurer there will be in the Permanent Fund bonds of the par value of $4000.

The Treasurer is under $5000 bond as per the order of your committee.

It is to be hoped that the financial condition of the Association will be such during the coming year that the amount of the permanent investment fund can be increased.

Respectfully submitted,

J. M. CAIRD,
Treasurer.

SECRETARY'S REPORT

Financial Statement

Cash on hand April 1, 1915		$4,283.60
Receipts:		
Initiation Fees		715.00
Annual Dues		6,790.00
Advertisments in Journal		2,519.00
Sales of Journal		87.58
Subscriptions to Journal		96.50
Sales of Back Numbers of Proceedings		56.07
Authors Copies of Papers		.10
Sales of Report of Committee on Water Rates		13.50
Sales of Specifications for Cast Iron Pipe		34.57
Sales of Hydrant and Valve Specifications		1.80
Interest on Investments and Deposits		109.71
Sales of Association Badges		28.00
Sales of 1914 Binding Cases		5.95
Total		$14,741.38
Disbursements:		
Office Expenses	$631.97	
Convention Expenses	535.32	
Printing Journal	3,928.77	
Committee Expenses	114.34	
Salary of Secretary-Editor	1,750.00	
Election Expenses	63.10	
Rent of Store Room	140.00	
Insurance	35.00	
Section Expenses	221.80	
Advertising, for New Members	191.92	
Binding Cases for 1915 Journal	14.10	7,626.32
Balance		$7,115.06
Investment in Securities		4,000.00
Cash on hand March 31, 1916		$3,115.06

MEMBERSHIP

Active			
Last report		1029	
Elected		199	
Restored		5	1233
Resigned		33	
Dead		11	
Dropped (delinquent)		39	83
			1150
Corporate			
Last report		70	
Elected		11	81
Associate			
Last report		123	
Elected		15	
Resigned	14	138	
Dropped (delinquent)	1	15	123
Honorary			
Last report (no changes)			7
Total membership			1361
Total last report			1229
Net gain			132

MR. DABNEY H. MAURY: *Mr. President and Gentlemen:* There is no question of the fact that no year in the entire history of the Association can present so favorable a showing as is indicated by the reports just read. No formal action has as yet been taken on these reports.

On motion of Mr. Maury the reports were received and placed on file.

PRESIDENT HILL: The Association should feel doubly gratified and doubly indebted to the Finance Committee for the results of their careful scrutiny of all the expenditures, and for the work of the Treasurer in conserving the resources of the Association, and for the painstaking and careful work of the Secretary in eliminating all possible useless expense. The chair feels this from his intimate knowledge of the workings of the Association during the year; and takes this opportunity of expressing it publicly to the Association.

PUBLICATION COMMITTEE

Mr. President and Gentlemen:

The Publication Committee have no formal report to make. The results of the work of the Publication Committee are before you in the quarterly PROCEEDINGS.

There is no special subject to suggest to the Association other than that the committee have tried faithfully to carefully read over in advance all the papers presented, and to make such suggestions from time to time as to them seem to be to the advantage of the Society's publications.

During the year some question has arisen in the minds of the committee as to whether the formation of the new sections and the increased number of papers due to the section idea would not carry our printing beyond our means; but happily, the report of the Finance Committee, which you have all just heard, has shown that we are able to keep up with our increased program and increased number of papers; and the committee beg to congratulate the Association upon that result.

The committee also have to thank the Secretary for his faithful and efficient labors during the year in the detailed work of preparing the quarterly PROCEEDINGS.

JOHN W. ALVORD, *Chairman*
DABNEY H. MAURY,
EDWARD BARTOW,
H. E. KEELER.

ADDRESSES OF WELCOME

Hon. Milo R. Maltbie, Chamberlain of City of New York, Hon. John F. Galvin, member Board of Water Supply, and Hon. William Williams, Commissioner of Water Supply, Gas and Electricity, addressed the convention, welcoming the members to the city.

President Nicholas S. Hill, Jr., responded on behalf of the Association.

PRESIDENT'S ADDRESS

Members of the American Water Works Association, Our Associates and Guests:

I wish to acknowledge the honor you have conferred upon me in electing me President of this Association, with sincere gratitude. I

can truthfully say that I have striven earnestly to promote the welfare of the Association during the past year by stimulating interest and encouraging new membership. There is an old adage that there is nothing new under the sun, and I lay no claim to any startling innovation or unusual achievement, for I have no doubt that everything which has been done or suggested has been done before. My only claim is that I have endeavored to give a good account of my stewardship.

It may be well briefly to outline the present condition of the Association and to enumerate some of the more important happenings of the year.

Without wishing to encroach upon the reports of the Finance Committee or of the Treasurer, I desire to state that at the end of the fiscal year terminating April 1, 1915, the balance to the credit of this Association amounted to $4,283.60, and at the termination of the fiscal year ending April 1, 1916, this balance has increased to $7,115.06. For this excellent showing the Association is indebted to the careful scrutiny by our able Finance Committee and to the earnest endeavors of our worthy Secretary to curtail all possible expense.

For the purpose of stimulating increase of membership a cup has been offered to that section securing the largest proportionate accretion of membership during the year, and a badge will be presented to the member in each section reporting the largest number of new members secured individually.

In 1902 the membership of this Association was 346; at the end of the 1915 convention 1229, a gain of 883, or an average of 60 per year. Since the close of the 1915 Convention up to this morning the net gain in membership for the past year has been 103, or 43 more than the average gain for the past fourteen years, and there will probably be a still greater increase before the close of this Convention. While the results of this contest have not fully met my expectations, the gain has been a substantial one and probably greater than it would have been without the stimulus of competition.

The Four State Section, composed of Delaware, Southern New Jersey, Maryland and Eastern Pennsylvania, was inaugurated at a most successful lunch held at the Bellevue-Stratford Hotel in Philadelphia on January 8, 1916, at which over a hundred men were present.

A petition for the formation of a Canadian Section has been submitted to the Executive Committee and favorably acted upon, and

the outlook for the formation of a California Section is promising. Steps have already been taken to secure a petition from the Southwestern Water Works Association asking for incorporation as a section of this Association. An endeavor has also been made to interest members of this Association in the formation of a Southeastern Section comprising the South Atlantic and Eastern Gulf States.

It has come to be realized that much of the valuable experience and real knowledge which are requisite in intelligent city planning are found among the members of specialized organizations. The National Conference on City Planning has suggested the idea of bringing those bodies together whose field of endeavor touches on city planning, for the common purpose of contributing to the general knowledge of the subject. I have, therefore, added a Committee on City Planning to the list of special committees. Mr. Ernest P. Goodrich was prevailed upon to become a member of our Association and to accept the chairmanship of this committee in order that he might give us the benefit of his experience in this work and direct the initial steps of the committee along the proper lines of endeavor. I am convinced that this Association should take a definite interest in the broad question of city planning, and that all water works men should lend their aid to the movement for scientific city development and the correlation of city work, so as to secure not only the most economical but the most beautiful results.

During the year a committee, consisting of Messrs. D. D. Jackson, Alfred D. Flinn and E. E. Minor, has been appointed to represent the American Water Works Association in the Joint National Conference on Electrolysis, and we have also had representation on the Joint Committee for the Standard Classification of Technical Literature.

This Association has been represented during the year at the Pan American Conference in Washington, at the National Conference on Immigration and Americanization, and at the Conference on Standard Screen Scales held at the Bureau of Standards in Washington, D. C. At this latter conference, representatives of various engineering associations, as well as manufacturers of products in which the measurement of the fineness of the product enters, were present.

It has been my earnest endeavor to stimulate committee work generally, as I believe the chairmen of the various committees will testify. I trust they were neither offended nor harassed by my constant appeals for full committee reports at this Convention. I

wish to take this opportunity to express my appreciation of the kindly assistance and courteous support accorded me by all officers and committees of this body, and especially to our genial Secretary. I wish particularly to say a word of praise for the able and painstaking work of the Committee on Arrangements for this Convention and the handsome support given them by the representatives of the Water Works Manufacturers Association.

It may be well to dwell for a short space upon some of the needs of this Association.

At the present time there are 6000 water works in villages, towns and cities of the United States. Of this number but 500 are represented by active or corporate members in the American Water Works Association. In other words, but 8 per cent of the water works men of the country receive the benefits which may be derived from this Association. We will never exert the influence which we should until we reach a greater number of those interested in water supply matters. Our field of usefulness must be expanded if we are to take a proper place among the technical associations of this country. The formation of sections brings added financial responsibility, and in order to render proper service to our members our revenues must be increased. The only feasible method of increasing our revenues is by increased membership. Notwithstanding our opportunity to promote the general good of the water works fraternity, within and without our fold, and our evident financial needs, membership is not increasing as rapidly as it should. This is due to the apathy of the individual, and some means must be found to awaken consciousness of the responsibility which rests with each member to extend the good influences of the Association. It was with this object in view that the cup was offered, and it is hoped that it will add greater stimulus to the work of accretion during the coming year.

Equally as important as increase of membership is committee work. The committee work of an organization like ours is the measure of its usefulness. In no other way can we meet the needs of our members so well as by thorough investigations along special lines, followed by carefully considered reports thereon. Our sister association, the New England Water Works, has an enviable record of usefulness through its excellent committee reports. This is true of other technical societies in this country. The members of this Association who accept service on special committees must be made

to realize the responsibilities which they incur by their acceptance. With a few exceptions, the results of our committee work during the past few years have been almost negligible. The endeavor of our committees must be quickened.

It is true our committees suffer from two handicaps. The first of these is the wide separation of members and the difficulty of convening for conference and consultation. This widely scattered assignment of committee membership is, I believe, largely the outgrowth of the demand for distributing appointments to different sections of the country so as to preclude the possibility of predominance in a given section. If this consideration is to hold, then a better distribution would be to divide the committees as a whole among the various sections, so that the members of a given committee could meet with reasonable facility and without unnecessary cost in time and money. Sectional pride, as laudable as it may be, must not, however, be placed above the results to be achieved. An effort has been made to partially overcome this handicap by providing accommodations for the special committees during the Convention and by an attempt to interest the chairmen in calling their associates together during Convention week, but the drawback to our present system will never be overcome until the great body of our men realize that committee work to be effective must be carried through by those who are qualified and within reasonable reach of each other.

The second handicap to our present committee work is the absolute lack of funds for their purposes. It is not just to ask busy men to expend their time and energies on investigations and reports without compensation and expect them to go into their own pockets to pay the cost of such investigations as well. Now that the Association is established on a firmer financial basis, I know of no way in which its funds may be expended to better advantage than in appropriations to assist these committees to work out the problems allotted to them. I earnestly recommend that we hereafter provide funds for this purpose. These appropriations should be placed in the hands of the Finance Committee, to whom applicaton may be made for such funds as the committee chairmen may require.

Next in importance to our own committee work is participation with other associations and societies on joint committees. Coöperation between societies which have common interests to foster or differences to adjust can only be productive of good in the end.

The conferees learn better to appreciate the needs of each. The presence of a representative on such committees adds to the prestige of this Association. It is an outward indication that we are broad enough to look beyond our own borders and contribute to general progress.

The complete lack of coördination between our sections and the Association is a defect of our present organization. Under the present Constitution, the section chairmen are Honorary Vice-Presidents, but unless it happens that some section officer is at the same time a member of the Executive Committee there is no point of contact between the governing bodies of the sections and the parent Association. This is not conducive to harmony of purpose, nor to a proper appreciation of the general needs of the Association by the section officers. I do not presume to offer a remedy for this lack of coördination, but respectfully suggest that this matter should be taken under immediate advisement with a view to securing a remedy which will be satisfactory to the Association at large.

The growth of sections has materially added to the volume of matter published in the JOURNAL OF THE AMERICAN WATER WORKS ASSOCIATION. The publication of a bi-monthly in lieu of a quarterly journal has been suggested in order to provide for this growth, and I have no doubt that the desirability of a bi-monthly publication will be decided affirmatively. The increase in the number of issues of the JOURNAL will, however, bring a concomitant increase in the cost of publication. I can foresee that one of the most serious problems which the Association may have to face in the future will be the added cost of publications resulting from the formation of sections. One of our most urgent needs, therefore, is a careful scrutiny of all papers presented at the section meetings with a view to eliminating matter of doubtful value, needless repetition of similar topics, and long and wordy papers replete with superfluous detail. It would be truly hurtful to limit valuable matter contributed by the sections, but proper editing will accomplish the same result that the meter does in the average water works, namely, reduce waste without restricting needful use.

In this connection it may be suggested that the editing of a paper is no reflection upon the author. The engineer or the water works superintendent is not necessarily an experienced writer, nor is he always qualified to judge of the necessity for presenting a given topic to the Association. Proper editing will be helpful rather than

hurtful to the author, inasmuch as such editing will on the one hand enable him to convey valuable ideas more clearly to those whom he wishes to reach, and on the other hand, if his topic will not contribute to the sum total of useful knowledge, he will be saved the humiliation of presenting a useless paper.

The last suggestion brings the increasing demands upon the time of the Secretary-Editor forcibly to the front. Owing to the growth of the Association, the development of sections, the resulting expansion of the publications and the number of papers to be edited, the advisability of separating the office of secretary and editor must be seriously considered. It is doubtful if any one person can attend to the duties of both secretary and editor with a proper regard for each.

We have reached a stage where it would be well worth while to employ a trained editor for the purpose of securing the very best publication. This Association is largely judged by the character of the proceedings and the quality of the papers which it publishes. One man will be well and completely occupied if he spends the proper amount of time in seeking subjects for new papers which will be appropriate and useful, in finding the best authors for their presentation, in reviewing those papers which have been gratuitously offered, and in editing them and putting them in proper shape for publication. The editor should report directly to the Publication Committee so that the final selection of papers will not rest entirely with an individual. The Publication Committee should be appointed with a view to having the editor in close touch with his committee, so that all matters relating to publications may be efficiently and expeditiously handled.

The Secretary should be free to devote his time to the general correspondence of the Association, to attending meetings of the local sections and stimulating their activity, to the accretion of membership, to promoting committee work and the proper relationship between this Association and allied societies, to the arrangement for conventions, and the numerous other duties which devolve upon the executive officer of an association of this size. If proper consideration is given to other and more immediate demands upon our resources, our finances will not now admit of the establishment of permanent headquarters with a well paid, full time secretary, although we must never lose sight of this objective. It is quite impossible, therefore, for an individual, with other duties in addition to

the secretaryship, to give the proper time to the editorship, or if he gives proper time to the editorship to do full justice to the work of the Secretary. In making this suggestion, no reflection whatever is cast upon our earnest and faithful Secretary, but the suggestion is made rather to relieve him of some of the burden which he is willingly carrying and which is daily increasing in arduousness.

Having outlined a few of the more immediate problems now confronting us, I trust you will bear with me for a moment longer if I speak upon the broader aspects of the development of this Association. Several of the technical journals have recently come forward with editorials under such captions as "Can the American Water Works Association Find Itself?" and "What is Wrong with the American Water Works Association?"

The same queries may be directed to our schools, our churches and our courts. In former times you could make an effort to teach people what they needed to know. Men know the kind of problems their children would have to face, but today education means a radically different thing. We have to prepare our children to meet the unexpected, for their problems are not the same as their fathers'. To prepare them for the unexpected means to train them in method instead of filling them with facts and rules. They will have to find their own facts and make their own rules, and if the schools cannot impart that power they no longer educate.

The churches have come down to us with a tradition that the greatest things are permanent, and they meet a population that needs above all to understand the meaning of development and change. Ministers are as bewildered as the rest of us, perhaps a little more so, for they are expected to stand up every week and interpret human life in a way that will vitalize feeling and conduct. To ask the clergy to find adequate meaning in this era is to expect each minister to be an inspired thinker. If the churches could really interpret life, they would be unable to make room for the congregations.

The courts have not been able to adjust themselves to the present conditions with the result that our people fight the courts blindly without a clear notion of what they would like the courts to do. They are irritated and constrained by a legal system that was developed in a different civilization.

In the last thirty years or so our conditions have been passing through a reorganization so radical that we are just beginning to

grasp its meaning. President Wilson stated in one of his speeches:

> There is one great basic fact which underlies all the questions that are discussed on the political platform at the present time. That singular fact is that nothing is done in this country as it was done twenty years ago. We are in the presence of a new organization of society. We have changed our economic conditions absolutely, from top to bottom; and with our economic society, the organization of our life.

Through all this period of change we have become individually disorganized, for we have lost the ties which formerly bound us. In the very period when man most needs to concentrate on external affairs, he is disrupted internally by a revolution in the intimacies of his life. Even his sexual nature is chaotic through the immense change that has come into the relations of parent and child, husband and wife. These changes distract him so deeply that the more conscientious he is the more he flounders in the bogs of his own soul. Lack of certitude is the greatest burden of the day.

Is it surprising that we have not found ourselves amid the world-wide chaos of changing customs, ideals, morals and beliefs? Would it be well if we rested complacently in the belief that we had found ourselves? Is it not better never to find ourselves and to hold the illusive goal of perfection ever before us as an incentive to greater and better accomplishment? Our Association has not been unaffected by the spirit of change which is rampant everywhere. This Convention is fraught with the significance of change. I well remember the Convention of 1901 at the Murray Hill Hotel in this city. The meeting room was little larger than the room used for your Executive Committee at this Convention. This small room was not more than half filled by the attendance on the papers. The membership could be found in the café at any time of the day or night in a more or less stimulated state of exhilaration. The exhibits were insignificant and typical of that lack of the application of scientific study to water works details which was apparent for so long. The individual evidenced an almost complete absence of the sense of personal responsibility to the Association. Compare that with the present and we have a vivid picture of change in ideals and aspirations as well as of the progress which we have made towards finding ourselves. From a mere handful of men we have developed a regiment of soldiers. From an obscure, heterogeneous body we have produced a recognized, stable and respected Association. I think we are criticised too often for our past, and there is a

common tendency to misinterpret our present aims, to stress our externals and to overlook our true spirit.

But what is wrong with us? The failure of this Association is not more conspicuous than that of other organizations or societies, and springs from the same cause. It does not meet the individual need, and the individual is not called upon to do enough for it. Those familiar with the work of our engineering societies have agreed that the original aims of these organizations are not completely satisfying at present. It is not sufficient to organize, hold conventions, elect officers, read papers and publish proceedings. All of these things are necessary, but they are not adequate. The instruction of the individual is not sufficient. Something must be done to help him in a more material sense. If this is true of the strictly engineering societies, it is more so with regard to this Association. Broadly speaking, we are a technical society, but one of the chief aims of this Association is to benefit the superintendent. The greatest benefit which we can render to the superintendent is to assist him toward honest endeavor, efficiency and capability in his office; to stand behind the intelligent, sober and industrious water works man. Our greatest care should be that his badge is a certificate of character, responsibility, efficiency and power. The plan will naturally entail more difficulty than the present method of allowing every member to shift for himself. If, however, the individual felt the strength of the Association behind him he would be a better official to the everlasting benefit of the community he serves.

It has been stated in the articles referred to that the prospect of a junket is more alluring to the average member of this Association than the opportunity to add to his knowledge of the water works business. We are accused of being more interested in voting for the next place of holding a meeting than in anything else; that we resent the adoption of businesslike methods of electing officers because we fear that by the adoption of such methods we are losing some of our vested rights; that there is a strong tendency towards the formation of cliques and factions; that the operating men resent the active part taken in the management of the Association's affairs by technically trained men, and that there is an over-ambitious attempt at expansion.

I wish at this time to make public denial of some of these charges.

I do not believe it is true that the prospect of a junket is more alluring to the average member than is the opportunity to add to his

knowledge of the water works business. I know of no conventions where more earnestness is displayed, and where the business sessions are more generally and conscientiously attended than are those of this Association.

Nor do I believe that we are more interested in voting for the next place of meeting than in anything else. The session at which the next meeting place is selected is the only one which brings all classes of members together, and there is a natural rivalry between the friends of this place or that, which of itself portrays an excess of interest which is more apparent than real. There are certain features of this session which furnish a little variation to the humdrum round of technical papers and consequently there is a general relaxation on the part of all. In this connection, however, I do not believe that the function of the Committee on the Selection of the Next Place of Meeting, which has been in existence for the past few years, has been understood. It was not the idea that this committee should select a place of meeting, nor appropriate any of the functions of the voting membership, but that it should report its findings to the Convention so that it might make an intelligent choice between the invitations extended and not be governed solely by the spell binding efforts of some orator who is given the privilege of the floor. I believe that every member of this Association recognizes that the motives which should govern the selection of a meeting place are:

1. Consideration of the growth and development of the Association which will be brought about by the selection.
2. The educational benefit which will be derived from the selection.
3. The facilities which will be offered for the proper transaction of the business of the Convention and the comfort and happiness of those who attend.
4. Last and least, consideration of the amusement features which will be offered to those who attend.

The appointment of this committee was solely for the purpose of having representatives of the voting body calmly and judiciously to weigh the merits of the invitations offered, to crystallize the facts, and suggest which of the invitations most nearly fulfilled these requirements.

Neither do I feel that our members resent more business-like methods in choosing officers, but rather that there is an honest dread, which is inherent in every American, lest this Association become

undemocratic in its administration and that its powers be usurped by a few individuals who will use it for their own specific purposes. The entire discussion of the proposed change in method of electing officers at the Cincinnati Convention indicates this, and I, for one, do not feel that the democratic spirit is one which will in the long run work any injury to the Association. While there may be some who honestly believe that officers should be nominated on the floor of the Convention and chosen in the old-fashioned way, I believe that the majority appreciate that the business of an organization of 1500 men cannot be conducted in the same way that an organization of 300 would handle its affairs, and in order to expedite the work of the Convention it is necessary to delegate some of the powers of the individual to representatives chosen in a fair, open and democratic way. The mode of electing officers in 1890 is not adapted to the needs of 1916. To revert to the method of electing officers on the floor of the Convention will not in any way lessen political activity or the desire for selfish gains if such motives are present in our ranks.

I regret to say I must admit there is some justice in the charge that there is a tendency on the part of some to separate the membership into classes, which tends to the formation of cliques and factions, but in this we are no different from other organizations. It is, however, most unfortunate for this Association that the question of the profession or occupation of the member should be referred to in connection with his appointment for office. As I see it, this Association is composed of three coördinate branches:

The engineer and technical man.

The water works superintendent, who may or may not be a technically trained engineer, and

The manufacturer.

Of these, the first two form the active voting membership and are eligible as officers of the Association, and the third composes the associate membership. Each of these divisions is capable of performing a service for the Association. The engineer brings to the water works superintendent the result of his highly specialized experience. The water works superintendent gives to the engineer the benefit of his practical experience in the application of the technical advice of the engineer. The manufacturer demonstrates to both the latest development in those devices and appliances which are useful alike to the engineer and to the superintendent. There

is no reason for conflict more than there is reason for conflict between an army and navy enlisted in the common cause of defending their country. The three branches of this Association are coördinate. They should be coöperative and not antagonistic. The development of the narrow spirit which invokes antagonism between the three coördinate branches is a parasite which, unless immediately choked, will sap the very life blood of the parent upon which it preys. The future of this Association will be hampered if such a spirit continues.

Finally, I disagree with the statement that the complete nationalization of this Association is beyond the realms of possibility. I do not believe that we can be over-ambitious in our attempts at expansion. I should like to see every worthy water works man in the United States enrolled as a member of this Association. The only way in which the mass of those who are in charge of the smaller works in this country may be reached is through the formation of local sections. Sectionalization brings added burdens, I admit, but I believe that we should accept these burdens in the name of service, manfully shoulder them and solve the problems antecedent to complete nationalization.

The issue of a single, country wide association was raised by my predecessor, and everyone who has a disinterested regard for the welfare of the water works fraternity should weigh its merits and disadvantages carefully. There is much to be said in favor of a single Association. It would cut the cost and time required in attending conventions in half. It would lessen individual expenses for dues. It would minimize the cost of publications. It would facilitate the classification of our technical literature. It would reduce the demands upon the time of those who prepare technical papers. It would coördinate committee work and standardize specifications. It is fair to assume that one large national organization would wield a stronger influence in molding public opinion than would several smaller bodies. A national water works association has a great opportunity to direct public opinion in proper channels when legislatures are about to enact laws which vitally affect such matters as stream pollution, the powers of state boards of health, the purity of drinking water and the protection of water sheds. It could educate the public upon the necessity of placing costly water plants in the hands of skilled and qualified men without regard for the political affiliations. It could, as suggested, aid and abet worthy mem-

bers in resisting the influences which all municipal employees realize are at work to reduce the efficiency which they are striving to attain.

When a national association is mentioned, some say that its size will destroy the intimate personal relation which has been one of the most valuable assets of the smaller organizations. It is at this point that the sections become useful. It must be remembered that under our present system the larger organization is composed of smaller units, each holding its own meetings at regular intervals. These sections offer an adequate means for close contact among members and insure acquaintanceship for the member who attends the national convention.

Sooner or later the question of one national association must be definitely decided. There is ample time for thought in the interim, but provincial barriers and petty ambitions must be cast aside and the outcome must be founded upon a broadminded view of the whole situation considered alone from the viewpoint of the greatest good to the water works profession and from the standpoint of service to the country at large.

Preparedness is the order of the day, and we must be ready to meet the question of nationalization when it becomes an active issue, as it surely will. We will not find ourselves until we decide whether we are to be a great national organization or a narrow association developed through narrow consideration and a narrow attitude towards our fellow members. We must make this body as strong as its convictions. It matters little what our ideals may be and what achievements we may hope for if these ideals and achievements cannot be reduced to action. The events of the past and the events of the day show that ideals amount to nothing if we lack the power to maintain them against opposition.

It is pertinent to ask at this point: What should be the ideal of this Association? My answer is: Service. Service of the individual to the Association. Service by the Association to the individual and to the country at large.

What is needed primarily is individual service, as the corporate service of the Association is nothing more than the composite service of the individual. What we need, therefore, is servants, irrespective of calling or profession, servants who are willing to do and to help achieve the best results for the Association. Servants who are simple, honest men, with a fellowship of interest, an esprit de corps, and a decided discipline; men who are interested in the actual

work they are doing, for whom work itself is in a measure its own reward, in whom the instincts of workmanship, of control over brute things, the desire for order, the satisfaction of service rendered and uses created, and the civilizing passions are given a chance to temper the primal desire to have, to hold and to conquer.

REPORTS OF SPECIAL COMMITTEES

COMMITTEE ON REVISION OF STANDARD SPECIFICATIONS FOR CAST-IRON PIPE AND SPECIALS

Mr. President and Gentlemen:

The committee is not prepared at this time to submit a final report, but substantial progress has been made during this past year. It was realized when this committee went to work that if the specifications were to be revised it would be very desirable to have joint action with the New England Water Works Association; that is, if their specifications needed revision, as well as those of the American Water Works Association, it would be very fortunate if the two associations could agree on a common standard.

The matter was, therefore, taken up with the New England Water Works Association, and they appointed a committee also to act in the revision of such specifications. These two committees have worked together. Without going into details as to the work that they have accomplished, it might be stated that a joint committee has been formed, consisting of three members of the American Water Works Association's Committee, and three members of the New England Water Works Association's Committee. This joint committee has prepared a tentative draft of revised specifications, copies of which have been sent to the manufacturers of cast iron pipe in the United States, for their consideration. At a later date it is proposed to set a time for the manufacturers to meet with this joint committee and express their views on the tentative specifications that have been sent to them. After this meeting, and when the views of the manufacturers are better understood than they are at present, it is proposed to present a revised draft of the specifications to the membership of the two associations for their consideration.

There is one feature in connection with the work of this committee which should be brought up, and that is the question of funds. For the ordinary committee work practically only a small fund is

needed; but if it is necessary to revise the tables of dimensions and weights, it will be appreciated that a good deal of work will have to be done. The New England Water Works Association, when they appointed their committee, appreciated the fact that such work would require the expenditure of a certain amount of money, and they appropriated $500 for the use of their committee. No special fund is appropriated for the use of the Commitee of the American Water Works Association.

PRESIDENT HILL: We are very much indebted to Mr. Gregory for this very illuminating statement of conditions with regard to his committee's work, which does not adequately, however, convey to your minds the true amount of work which has been done this year by the members of that committee. They have had a very difficult situation to handle, and their work has involved a great deal of detail. The necessity of appropriations for committee work is well illustrated in the case of this particular committee.

On motion of Mr. Leonard Metcalf the committee was continued, and the matter of the appropriation of funds necessary to use was referred to the Finance Committee, with power to act.

COMMITTEE ON DEPRECIATION

MR. LEONARD METCALF, *Chairman. Mr. President and Gentlemen:* The Committee on Depreciation is not prepared to make its final report at this time. Very careful consideration has been given to the subject of depreciation, and a detailed report has been prepared and is now in the hands of the committee and actively under consideration and discussion. Unfortunately, two members of the Committee are not here. One of them will be here later in the week.

It seemed wiser, in view of the apparent ambiguity in certain paragraphs of the report, or duplication of certain paragraphs, to give a little more time to the discussion of those paragraphs before presenting or attempting to present the report in its final shape to the association.

MR. W. F. WILCOX: As a member of the Depreciation Committee, the speaker feels that some consideration should be given to the appreciation that the members of the Depreciation Committee feel of the laborious work that Mr. Metcalf has done on this subject.

The report covers twenty-five typewritten pages, which he has gotten up at the expense of a good deal of time and self-sacrifice for the benefit of the Association. The committee, as a whole, feels a deep regret that it could not agree with this report immediately and have it ready to present to the Association; but the committee felt that in justice to the committee as a whole, and in justice to the Association, it should carefully go over each one of the important points as viewed from different locations and different conditions, and attempt to get a harmonious report which would go on file and which would be a guide to the water works men in discussing and arriving at valuations as affected by depreciation.

On motion of Mr. H. E. Keeler, the committee was granted the additional time asked for in which to make its final report.

PRESIDENT HILL: This is another Committee Report that the Association can well look forward to with interest, and with a feeling of assurance that the membership generally will benefit by the results of the work that has been done.

STANDARD SPECIFICATIONS FOR HYDRANTS AND VALVES

Mr. B. C. LITTLE, *Chairman:* Your Committee on Standard Specifications for Hydrants and Valves has held joint meetings with a similar committee of the New England Water Works Association, in an endeavor to agree upon a uniform standard for fire hydrants. The committee was also represented at the special meeting of the New England Water Works Association in Boston April 15, 1914, when the report of their committee was brought up for action by that Association. At that meeting the report of the committee, after some amendments and changes, was adopted, with the exception of three sections, which were referred back to the committee for further consideration and report. These sections referred to friction loss in hydrants; size of stem and hydrant nipples.

Your committee did not agree with the report of the New England Association Committee as to these three items, but has been unable to arrange a further conference with the New England Committee, though repeated efforts have been made to secure such a conference.

1. The allowance in the New England Committee's specifications for friction loss did not consider 4-inch hydrants, though hydrants of that size were retained on the list of standard hydrants in the report of the committee as adopted.

2. The report of the New England Committee did not permit nipples "locked and leaded" in place, providing only for threaded and screwed in nipples, except that nipples with lugs and bolted to hydrants were permitted.

3. The diameter of the operating stem was specifically stated and considered only the two general styles of hydrants, gate and compression or toggle. The sizes specified were considered by your committee as unnecessarily large for 4-inch hydrants. Your committee also considered that different patterns of hydrants would require different strength, and consequently size, of stem.

In all other respects your committee substantially agrees with the specifications of the New England Association, and has accordingly changed the specifications adopted by this Association June 24, 1913, so as to make them practically identical with those of the New England Association, so there will not be two sets of specifications.

The modified specifications for hydrants are submitted as follows:

Specifications for Hydrants

1. size

Classification: The size of hydrant shall be designated by the nominal diameter of the valve opening, which must be at least 4 inches for hydrants having two $2\frac{1}{2}$ inch hose nozzles; 5 inches for hydrants having three $2\frac{1}{2}$-inch nozzles; and 6 inches for hydrants having four $2\frac{1}{2}$-inch nozzles; and shall be classed as one-way, two-way, three-way or four-way, etc., according to the number of $2\frac{1}{2}$-inch hose outlets for which they are designed.

Area of Water-Way: The net area of the hydrant at the smallest part, when the valve is wide open, must not be less than 120 per cent that of the valve opening.

Bell Ends or Flange Ends: All hydrants must be fitted with bell ends to fit standard cast-iron pipe, or if flanged they must be fitted with flanges of the standard dimensions corresponding to the pressure under which they are to be used; connecting pipe or flange from main to hydrant in no case to be less in diameter than the valve opening. (The standards referred to are those adopted or that may be adopted by this Association.)

2. GENERAL DESIGN

Type: Hydrants may be of compression or gate type.

Change in Diameter: Any change in diameter of the water passage through the hydrant must have easy curve, and all outlets must have rounded corners of good radius.

Water Hammer: Hydrants must be so designed, particularly as regards the pitch of the thread of the operating stem, that, when properly operated a water hammer will not be caused which will give an increased pressure to exceed the working pressure, when such pressure is over 60 pounds, nor increase the pressure more than 60 pounds when operated under less working pressure than 60 pounds.

Broken Hydrant: Valves when shut must remain reasonably tight when upper portion of barrel is broken off.

Friction Loss: With a 5-foot hydrant discharging 250 gallons per minute, through each $2\frac{1}{2}$-inch outlet, the total friction loss of the hydrant must not exceed 2 pounds for two-way, 3 pounds for three-way, and 4 pounds for four-way hydrants.

Strapping: When requested, hydrants must be fitted with 2 lugs, so that the leaded joint underground can be strapped.

Flange Joints above Ground: When hydrant barrel is made in two sections, the upper flange connection must be at least 2 inches above the ground line.

3. MATERIAL

Hydrant Body: The hydrant body must be made of cast iron.

Cast Iron: All castings shall be made from a superior quality of iron, remelted in cupola or air furnace, tough and even grain, and shall possess a tensile strength of 22,000 pounds per square inch. The casting must be clean and perfect, without blow or sand holes, or defects of any kind. No plugging or stopping of holes will be allowed.

Specimen Bars: Specimen bars of the metal used, each being 26 inches long, by 2 inches wide, and 1 inch thick, shall be made without charge, as often as the engineer may direct, and in default of definite instructions, the contractor shall make and test at least one bar from each heat or run of metal. The bars when placed flatwise upon supports 24 inches apart, and loaded in the center, shall support a load of 2200 pounds, and show a deflection of not less than 0.35 of

an inch, before breaking; or, if preferred, tensile bars shall be made which shall show a breaking point of not less than 22,000 pounds per square inch. Bars must be cast as nearly as possible to the dimensions without finishing, but corrections may be made by the engineer for variations in width and thickness, and the corrected result must conform to the above requirements.

Wrought Iron: All wrought iron shall be of the best quality of refined iron of a tensile strength of at least 45,000 pounds per square inch.

Composition Metals: All composition or other non-corrodible metals used to be of the best quality, to have a tensile strength of not less than 32,000 pounds per square inch, with a 5 per cent reduction of area at breaking point.

4. HOSE NIPPLES AND VALVES

Hose Nipples: Hose nipples must be of bronze or suitable non-corrodible metal, either threaded with a fine thread into the hydrants and securely pinned in place, or carefully locked and caulked in place.

Hose Threads: Hose threads on all hydrants to be installed in any given community must of necessity be interchangeable with those already in service, but, where practicable, threads should conform to the National Standard.

5. HYDRANT SEAT AND GATE

Seat: The seat must be made of bronze or suitable non-corrodible metal, securely fastened in place.

Valve: The valve must be faced with a yielding material, such as rubber or leather, except that, if of the gate type, a bronze ring may be used. The valve must be designed so that it can be easily removed for repairs without digging up the hydrant.

6. DRIP VALVE

Drip: A positively operating non-corrodible drip valve must be provided and arranged so as to properly drain the hydrant when the main valve is closed. The seat for the waste valve, which must be fastened in the hydrant securely, must be made of non-corrodible material. All other parts of the drip mechanism must be so designed as to be easily removed without digging up the hydrant.

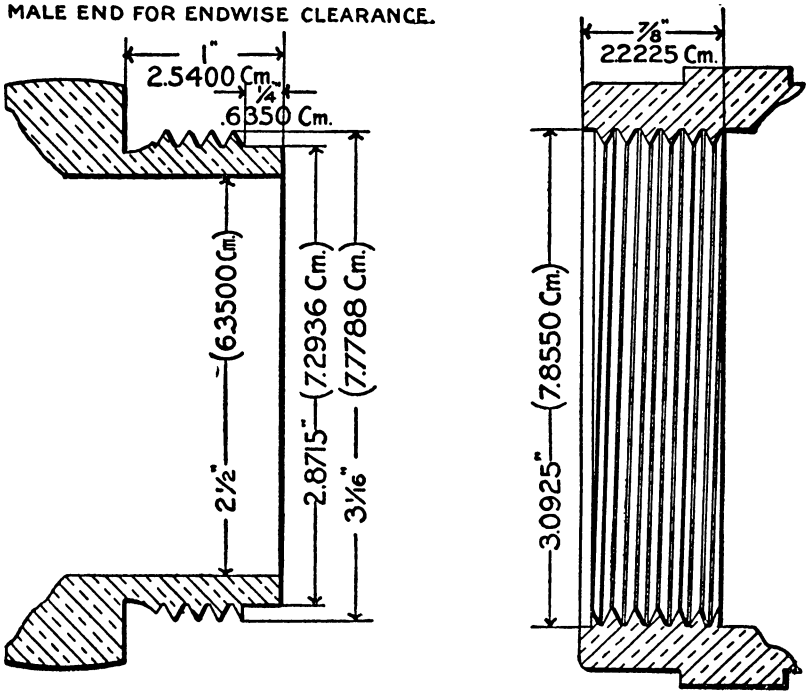
7. OPERATING PARTS

Operating Threads: The operating threads of the hydrant must be so arranged as to do away with the working of any iron or steel parts against iron or steel. Either the operating screw or the oper-

NATIONAL STANDARD HOSE COUPLING

	INCHES	CENTIMETERS
INSIDE DIAMETER OF HOSE COUPLING	2.5000	6.3500
BLANK END OF MALE PART	0.2500	0.6350
OUTSIDE DIAMETER OF THREAD FINISHED	3.0625	7.7788
DIAMETER OF ROOT OF THREAD	2.8715	7.2936
CLEARANCE BETWEEN MALE AND FEMALE THREADS	0.0300	0.0762
TOTAL LENGTH OF THREADED MALE END	1.0000	2.540C

NUMBER OF THREADS PER INCH..... 7½
PATTERN OF THREAD..... 60° V
CUT OFF AT TOP OF THREAD..... 0.01 OF AN INCH
LEFT IN BOTTOM OF VALLEY..... 0.01 OF AN INCH
FEMALE END TO BE CUT 0.125 OF AN INCH SHORTER THAN MALE END FOR ENDWISE CLEARANCE.



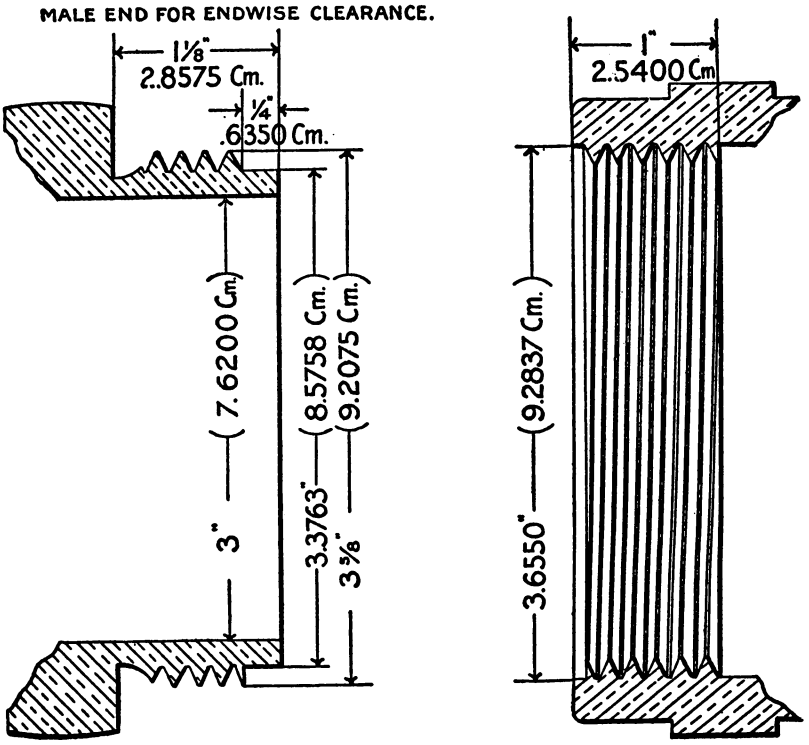
2½" SIZE (6.3500 Cm.)

ating nut must be made of non-corrodible metal, and sufficiently strong to perform the work for which intended.

NATIONAL STANDARD HOSE COUPLING

	INCHES	CENTIMETERS
INSIDE DIAMETER OF HOSE COUPLING	3.0000	7.6200
BLANK END OF MALE PART	0.2500	0.6350
OUTSIDE DIAMETER OF THREAD FINISHED	3.6250	9.2075
DIAMETER OF ROOT OF THREAD	3.3763	8.5758
CLEARANCE BETWEEN MALE AND FEMALE THREADS	0.0300	0.0762
TOTAL LENGTH OF THREADED MALE END	1.1250	2.8575

NUMBER OF THREADS PER INCH.....6
PATTERN OF THREAD.....60° V
CUT OFF AT TOP OF THREAD.....0.01 OF AN INCH
LEFT IN BOTTOM OF VALLEY.....0.01 OF AN INCH
FEMALE END TO BE CUT 0.125 OF AN INCH SHORTER THAN MALE END FOR ENDWISE CLEARANCE.



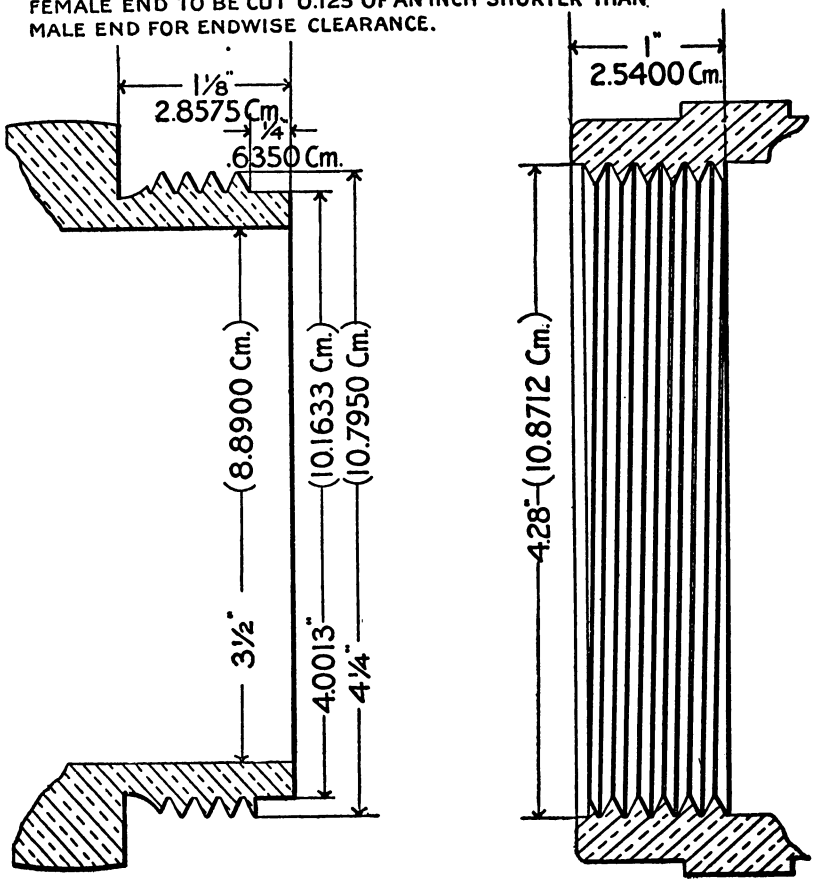
3" SIZE (7.6200 Cm.)

Top Nut: The stem must terminate at the top in a nut of pentagonal shape, finished with slight taper to 1½-inch from point to

NATIONAL STANDARD HOSE COUPLING

	INCHES	CENTIMETERS
INSIDE DIAMETER OF HOSE COUPLING	3.5000	8.8900
BLANK END OF MALE PART	0.2500	0.6350
OUTSIDE DIAMETER OF THREAD FINISHED	4.2500	10.7950
DIAMETER OF ROOT OF THREAD	4.0013	10.1633
CLEARANCE BETWEEN MALE AND FEMALE THREADS	0.0300	0.0762
TOTAL LENGTH OF THREADED MALE END	1.1250	2.8575

NUMBER OF THREADS PER INCH.....6
PATTERN OF THREAD.....60° V
CUT OFF AT TOP OF THREAD.....0.01 OF AN INCH
LEFT IN BOTTOM OF VALLEY.....0.01 OF AN INCH
FEMALE END TO BE CUT 0.125 OF AN INCH SHORTER THAN MALE END FOR ENDWISE CLEARANCE.

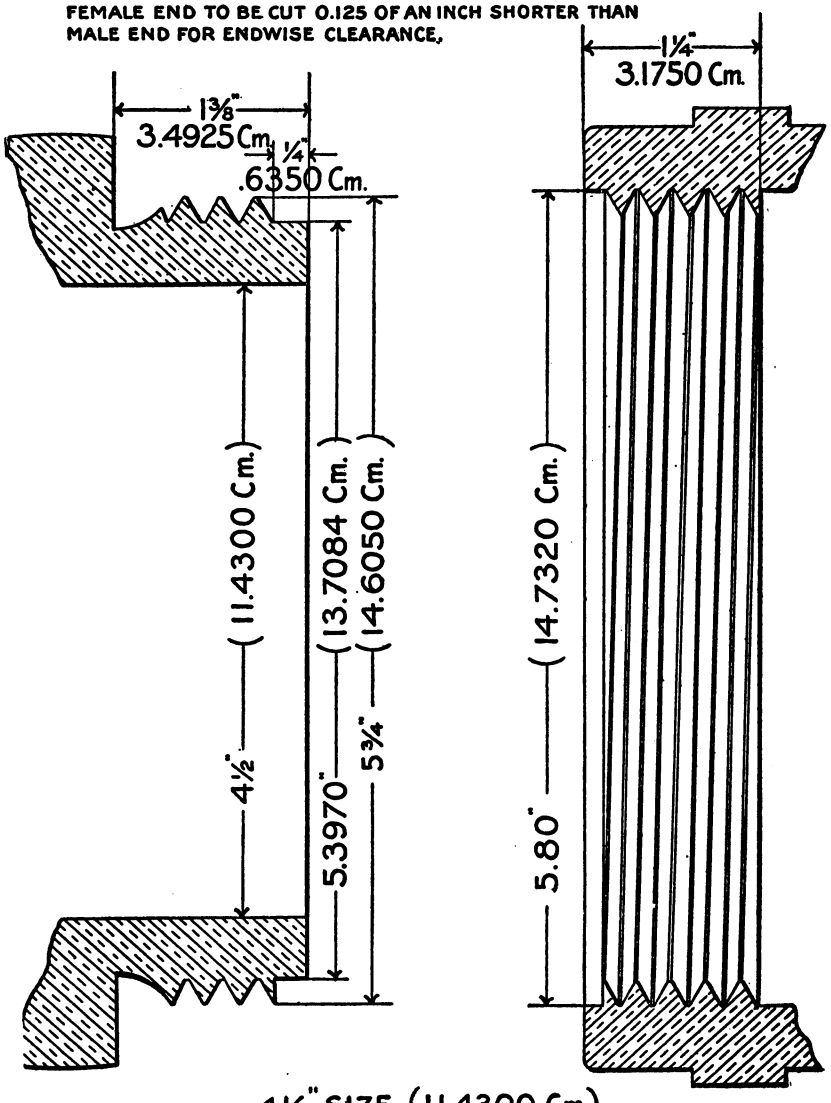


3½" SIZE (8.8900 Cm.)

NATIONAL STANDARD HOSE COUPLING

	INCHES	CENTIMETERS
INSIDE DIAMETER OF HOSE COUPLING	4.5000	11.4300
BLANK END OF MALE PART	0.2500	0.6350
OUTSIDE DIAMETER OF THREAD FINISHED	5.7500	14.6050
DIAMETER OF ROOT OF THREAD	5.3970	13.7084
CLEARANCE BETWEEN MALE AND FEMALE THREADS	0.0500	0.1270
TOTAL LENGTH OF THREADED MALE END	1.3750	3.4925

NUMBER OF THREADS PER INCH.....4
PATTERN OF THREAD.....60° V
CUT OFF AT TOP OF THREAD.....0.01 OF AN INCH
LEFT IN BOTTOM OF VALLEY.....0.01 OF AN INCH
FEMALE END TO BE CUT 0.125 OF AN INCH SHORTER THAN MALE END FOR ENDWISE CLEARANCE.



4½" SIZE (11.4300 Cm.)

flat, except for hydrants to be installed where existing hydrants have different shape or size of nut, in which case the additional hydrants must have operating nuts similar to the old one for uniformity. The nut socket in the wrench must be made without taper, so as to be reversible.

8. STUFFING BOX AND GLAND

Stuffing Box: The stuffing box and gland must be of bronze or suitable non-corrodible metal, or bushed with bronze or suitable non-corrodible metal, when an iron or steel stem is used, or when an iron operating stem nut passes through the stuffing box. When packing nut is used, it must be made of bronze or suitable non-corrodible metal. The bottom of the box and end of the gland or packing nut must be slightly beveled.

Gland Bolts: Gland bolts or stubs must be at least $\frac{1}{2}$-inch in diameter. Bolts or studs may be either of bronze or suitable non-corrodible metal, iron or steel. The nuts must always be of bronze or suitable non-corrodible metal.

9. HYDRANT TOP

Top: The hydrant top must be designed so as to make the hydrant as weather proof as possible, and thus overcome the danger from water getting in and freezing around the stem. Provisions must be made for oiling, both for lubrication and to prevent corrosion. A reasonably tight fit should be made around the stems.

Lettering: There must be cast on top of the hydrant in characters raised $\frac{1}{8}$-inch, an arrow at least $2\frac{1}{2}$ inches long, and the word "open" in letters $\frac{1}{2}$ inch high and $\frac{1}{8}$ inch in relief, indicating direction to turn to open the hydrant.

10. HOSE CAP

Caps: Hose caps must be provided for all outlets, and must be securely chained to the barrel with a chain constructed of material not less than $\frac{1}{8}$ inch in diameter.

Cap Nut: The hose cap nut must be of the same size and shape as the top or operating nut.

Washer in Cap: When requested by the purchaser, a leather, rubber or lead washer must be provided in the hose cap, set in a groove to prevent its falling out when the cap is removed.

11. MARKINGS

Marking: The hydrant must be marked with the name or particular mark of the manufacturer. All letters and figures must be cast on the hydrant barrel above the ground line.

12. TESTING

Testing: Hydrants for pressures of 150 pounds or less, after being assembled, shall be tested by hydraulic pressure to 300 pounds per square inch, before leaving the factory. If the working pressure is over 150 pounds per square inch the hydrants must be tested to twice the working pressure. The test must be made with the valve open in order to test the whole barrel for porosity, and strength of hydrant body. A second test must be made with valve shut, in order to test the strength and tightness of the valve.

13. DIRECTIONS TO OPEN

Opening: Hydrants must open to the left (counter clockwise) except those to be installed where existing hydrants open to the right, in which case the additional hydrants must turn the same as the old ones for the sake of uniformity.

Your committee has not been able to decide upon specifications for light valves, for use in connection with filter plants, etc. But believes that such specifications should be established, to protect purchasers from the makers of valves much too light and flimsy in construction for even such light pressure. While valves in filter construction usually work under very light pressure, they are more frequently used than line valves and should be so constructed as to withstand such frequent use. For the present we resubmit the valve specifications adopted in 1913.

B. C. LITTLE, *Chairman.*
MORRIS R. SHERRERD,
JAMES H. CALDWELL,
DENNIS F. O'BRIEN,
CHARLES R. WOOD,
W. R. CONARD,
J. M. DIVEN.

B. C. LITTLE, *Chairman:* We would like to have this put in as a final report for hydrant specifications.

On motion of Mr. H. E. Keeler the report was accepted, and the specifications adopted and ordered printed in the JOURNAL.

On motion of Secretary Diven the Secretary was authorized to have 2000 separate copies printed, one copy to be sent to each member of the Association, the remaining copies to be held for future distribution or for sale.

COMMITTEE ON WATER CONSUMPTION

Your Water Consumption Committee presents herewith its report for 1915–1916 and considers that this report should be designated as a progress report.

Careful consideration was given as to the advisability of attempting to obtain further information along the general lines followed in the 1914–1915 report, but it was concluded that the digesting of data previously obtained and the consideration of water consumption forms for annual reports would be a more useful work.

The data previously given have been grouped in tabular form by listing all communities reporting in order of consumption per capita, beginning at the lowest recorded and placing the statistics under the following headings:

City
Population
Per cent taps metered
Per cent water metered
Water unaccounted for
Total per capita consumption
    Geographical group
        Eastern—Middle West—Western
    Climatical group
        Severe winter—Moderate winter—No winter
    Per cent of water metered (4 divisions)
    Per cent of taps metered (4 divisions)
    According to population (3 divisions).
Domestic per capita consumption
    Per cent of taps metered (4 divisions)

This grouping brings out clearly the variation of communities in consumption per capita under what may be similar conditions and further emphasizes the necessity of an intensive study of water consumption and allied statistics to permit intelligent use of data given by the cities, towns and villages. The previous experience of this committee, as well as that of water works engineers and superintendents, shows that the existing form for reporting water consumption as adopted by the American Water Works Association should be revised. An examination of the records revealed that the present form is essentially the same as that adopted by the New England Water Works Association in 1886, which was as follows:

1. Estimated total population.
2. Estimated population on line of pipe.
3. Estimated population supplied at date.
4. Total number of gallons consumed for the year.
5. Passed through domestic meters.
6. Passed through manufacturing meters.
7. Average daily consumption in gallons.
8. Gallons per day to each inhabitant.
9. Gallons per day to each consumer.
10. Gallons per day to each tap.

The New England Water Works Association reported on uniform statistics for water works in 1902, and then recommended the form adopted in 1886 with the combination of lines 5 and 6 into one reading "Passed through meters" and the adding of the line "Percentage of consumption metered."

In 1908 a committee of the American Water Works Association reported recommending the form adopted by the New England Water Works Association in 1902 and adding two lines relating to the cost of water. The American Water Works Association has not changed its form since 1908, although the New England Water Works Association had presented to it in 1913 in a very comprehensive report of its Committee on Water Consumption, Statistics and Records, Leonard Metcalf, Chairman, a revised and enlarged form which much more adequately deals with consumption of water. One form should be used by the two associations and prompt action on this important matter is most desirable. As a step towards obtaining such action, your committee recommends that this Association continue a water consumption committee and request the New Eng-

land Water Works Association to authorize a suitable committee of that Association to confer on what changes, if any, should be made in the New England form as a result of further experience, before a form is adopted jointly by both associations.

Respectfully submitted,

EDWARD S. COLE, *Chairman*,
J. N. CHESTER,
W. S. CRAMER,
WILLIAM W. BRUSH,
JOHN H. DUNLAP.

MR. J. N. CHESTER: The work of this committee has been and is very difficult, as probably some of the members of the similar committee of the New England Water Works Association will appreciate; all the members of the different Associations are being imposed upon by the flood of inquiries for information. The work of the committee this year has been largely looking toward the amalgamating of the work of the American Water Works Association and the New England Water Works Association. One matter that was left out of the report, and in which the speaker has been most interested, is securing some early results on what perhaps is the ultimate and most valuable part, namely, what percentage of water we cannot account for at all. Now, there have been two instances since our last meeting where a good tabulation of results of that kind would have been worth several thousand dollars to the two different corporations involved. Whether municipal or private plants, it seems to be one of the hardest things and the least touched upon in published statistics. Commissions are now forcing companies and corporations to spend all the way from $5000 to $20,000 analyzing their situations looking to the fixing of water rates; and you come to this question and state the facts as you know them, to wit, that 40 per cent of the water is unaccounted for. You may explain that you have a master-meter measuring the water to your distribution system, that you have every connection on that distribution system metered, that the metered consumption totals, we will say, in the neighborhood of 60 per cent of the registration of the master-meter, and the commission will sit and look aghast at you when you make that statement. When you turn to the records and annals of our different Associations you can find very little in them to substantiate such a statement, and yet the crux of the condition finally de-

pends upon that very thing. We have nothing to go to; and you can see that this Water Consumption Committee has some work to do that should be done quickly.

This committee needs to have some help in gathering material during the next year. It does not want to go through a long effort toward harmonizing the two associations, because if the committees of the two Associations have as hard a time getting together as some of the other committees of these two Associations have had it will be two years more before results are obtained.

On motion, the report of the Committee on Water Consumption was received, ordered printed and the committee continued.

STANDARD FITTINGS FOR WATER METERS

At the last meeting of the Association held at Cincinnati, your committee made a verbal report that it hoped to have a complete recommendation prepared and submitted at this meeting. Since that time, several new members have been added to the committee, and among others a representative of the manufacturers. He has conferred with the majority of the largest manufacturers of water meters, and while they take no exception as a compromise to the lengths as recommended at the Philadelphia meeting, he states that he is unable to make further progress at this time. This is not because of any lack of disposition to coöperate, but simply beyond the first three sizes the difference in shape and model makes the adoption of a uniform length exceedingly difficult.

Your committee believes that, while the work will be a long one, in the end the results will be satisfactory; therefore this committee recommends that the lengths as suggested by this committee at Philadelphia be promulgated by the American Water Works Association as standard, which lengths were as follows:

⅝ inch	7½ inch	2 inch	15½ inch
¾ inch	9 inch	3 inch	24 inch
1 inch	10¾ inch	4 inch	29 inch
1½ inch	12⅝ inch	6 inch	36 inch

Your committee believes that it is possible to establish standard connections based on the lengths as herein reported, which will be acceptable to the manufacturers, but this cannot at this time be done as a whole, but that an effort should be made to establish standard

connections for $\frac{5}{8}$ inch, $\frac{3}{4}$ inch and 1 inch which will meet with the approval of the manufacturers.

When this has been accomplished, then it will be possible to take up the $1\frac{1}{2}$ inch and 2 inch sizes, and later probably to reach the larger sizes.

Respectfully submitted,

CHESTER R. MCFARLAND, *Chairman.*

June 8, 1916.

MR. CHESTER R. MCFARLAND: In talking with the member of our committee who represented the manufacturers he says that they do not want this standard put forth as the standard of the manufacturers, but as a standard promulgated by this Association.

Our idea in connection with this report is that there should be prepared connections for $\frac{5}{8}$ and $\frac{3}{4}$-inch meters giving the length of the tail piece, the threads per inch, the size of the union coupling, and the number of threads to the inch. Those sizes are now so nearly uniform that we believe that if this was prepared to as nearly a uniform standard as now exists we could get the manufacturers to accept it; we find in comparing these threads that there is but a slight difference in threads and in many cases you can force them on.

Our committee has been scattered from the south coast of Florida to the Great Lakes, and we have found it impossible to get together except at these meetings. Usually we get together after the convention has been in session two or three days, and it is possible that this work could be better prosecuted if this Association would appoint a committee the members of which would be close together and nearer the center of manufacture.

The manufacturers have shown a disposition to do everything they can; and they are today feeling that they would be glad to coöperate, that is, if we could arrive at some standard.

PRESIDENT HILL: You have heard the report of this committee. What is your pleasure, gentlemen, to accept the report and file it and leave it to the incoming President to act on Mr. McFarland's suggestion for the appointment of a new committee, or to make a motion embodying your instructions with regard to the appointment of a committee?

MR. BERNARD M. WAGNER: Would it not be possible for each section to have a committee on this subject and then have the results of their deliberations reported at the next Convention? That might be the best way, if you want to get your committees together; for instance, appoint a committee for your New York section and a committee for each of the other sections, and let each section take up the subject in its own way. Some sections will probably take it up from the manufacturer's standpoint, whereas others may take it up entirely from the user's standpoint.

PRESIDENT HILL: That suggestion would probably be taken under careful advisement by Mr. Metcalf.

On motion of Mr. Bernard M. Wagner the committee's report was accepted and the matter of a new committee referred to the incoming President.

PLUMBING CODE AND CONTROL OF PLUMBERS

In taking up the subject of control over the installation of private plumbing this committee has naturally confined itself to the water works viewpoint. It is now generally accepted that adequate supervision of plumbing as regards all sanitary features should be vested in the public health authorities. This will undoubtedly continue to be the general practice except perhaps in a few communities where the health department is poorly organized. From the water works viewpoint, no questions of health are involved.

There are two important reasons, however, which compel the interest of the water department in the private plumbing. The first is the necessity of preventing undue waste of water. The second is the desirability of promoting general and individual satisfaction with the water service.

It is well known that by far the greatest waste of water on almost all systems occurs from defective service lines, house plumbing and leaky fixtures. This can be largely reduced by the use of meters, although even in this case, it is necessary that the service lines be laid by the water department or else that it have suitable control over the plumbers installing them. In the case of the many systems where meters are not used for one reason or another it becomes almost imperative that the water authorities have control over the materials and workmanship entering into private plumbing.

The city of New York through its highly efficient officers and engineers has developed the greatest water works system in the world of ancient or modern times, furnishing an abundant supply of water to its population of 5,600,000 citizens.

The daily consumption in Greater New York is 545,000,000 gallons, for which an annual revenue is collected from frontage and metered accounts amounting to $13,000,000.

2750 officers and employees are required to perform the regular work of the Department of Water Supply.

Mileage of mains	2643 miles
Valves in the distributing system	60,700
Fire hydrants	43,300
Mileage of streets	2643 miles
Range of elevation zero to	426 feet
Cash value of existing system	$227,000,000
Total number of services	377,349
Total number of meters in use	101,068
Total number of unmetered services	276,281
Percentage of services metered	26 per cent

We give the above data for the value of the information it contains and to show that a comparatively small percentage of services are metered in the world's greatest water works and we are forced to deal with the problem as it exists.

It often occurs that the water consumers' yearly plumbing repair bills exceed the annual charge for an abundant supply of pure and wholesome water. The street service line may be laid at the proper depth according to local climatic conditions. No trouble may exist inside the dwelling or building. The service is interrupted. The water department is requested to investigate, and finds the supply pipe frozen from the curb line into the premises, due to insufficient depth of trench when installed by the plumber. The water department has been put to the needless expense of an investigation. The consumer is required to expend from $5 to $10 to restore water service. The cost of the water service to patrons is represented by the aggregate of all items properly chargeable to it, and an intelligent public has begun to look upon it in that way.

The circumstance that water works operators are not obliged to carry these suggestions too far cannot blind even the most indifferent officer to the fact that upon the water works none the less devolves the responsibility and the burden.

The increased cost of one kind of house supply pipe over another applies to the material only as it costs the same to transport, fabricate and install.

The average dwelling requires about 100 feet of pipe for complete hot and cold water service. The difference, then, in the cost of using one grade of pipe over another is reflected in the price of the 100 feet of pipe.

It may be urged that the water department is hardly concerned with the promotion of general and individual satisfaction with the water service to the extent of supervising private plumbing. It should be recognized, however, that the water supply may be excellent as regards quality, quantity and pressure in the mains and yet as a result of improper plumbing be extremely unsatisfactory as drawn by the consumer.

The whole broad tendency of modern public service is to extend that service just as far as possible with advantage to the consumer. The consumer should have the benefit of the knowledge and experience of the water works officers in all ways that will operate to improve his individual service.

Furthermore, it should not be lost sight of that the greater the satisfaction of the consumers as a whole with the water service, the more readily is the necessary popular support obtained for the water department.

There are many ways that the knowledge and experience of the water department may be made of value to the consumer, whether by embodying the results in a plumbing code with proper supervision of plumbers or by systematically imparting the information to the consumers and local plumbers in an informal manner.

As a result of its experience and familiarity with the chemical nature of the water it can determine the best material for piping having regard to length of life, corrosion, red water troubles, safety under pressures involved and cost of maintenance.

The best arrangement of piping can be suggested, looking to protection against leakage and frost, elimination of vibration and noise, accessibility and provision for convenient drainage.

CONCLUSIONS

As a result of its consideration of the subject your committee desires to submit the following conclusions:

1. It would in most cases prove of benefit to have the water department coöperate with the other authorities, notably the health department, in the preparation of the plumbing code, and in the examining and licensing of plumbers.

2. Where the meter system is not in use it is imperative that the water department have control of the private plumbing installed as regards all supply piping and fixtures connected thereto, including service lines. Such control to include the specifications of materials and workmanship involved by means of the plumbing code or other suitable set of rules, the licensing of plumbers and the inspection of the work.

3. Where meters are in use, the water department should have entire control of all service lines up to the location of the meter.

4. The water department in all cases should endeavor to furnish its consumers with as much helpful information as possible with regard to the best materials and workmanship adapted to local conditions and all other suggestions tending towards minimizing the troubles arising from private plumbing from any cause.

Respectfully,
SCOTLAND G. HIGHLAND, *Chairman.*
JAMES R. MCCLINTOCK,
WILLIAM I. KLEIN,
WILLIAM MCCARTHY,
Committee.

DISCUSSION

MR. THEODORE A. LEISEN: It would be highly inadvisable for this Association to go on record as recommending that water departments take over the control of all the plumbing throughout the house. The speaker's feeling is that that is going further than would be found advisable in general practice. He would hesitate on that account to vote to recommend the adoption of the report as representing the views of the Association.

MR. C. B. SALMON: *Mr. President and Gentlemen*: What Mr. Leisen has said has a backing in the experience of the electrical business. Most of the electrical companies today, that is the private companies, have ceased to do house electrical wiring, or house repairs of any kind, for the reason that so many people ring up the

phone and want little things done that they do not wish to pay for. If you take over all this house inside plumbing you are going to have the same trouble, and your telephones will be ringing constantly because some faucet is leaking and cannot be shut off, and they want you to send a man right up; and then because it is such a little matter they do not want to pay for the service. The speaker would not like to vote to assume the responsibility of any kind of plumbing inside of the house. There may be some justice and some reason for having the control of the service pipe up to and including the meter, and it has been advocated that the utility ownership should include both the service line to the curb and into the house; the labor and maintenance of the meter being guaranteed by the property owner when he signs the application to put in the service. If you include inside plumbing you are going to have to do a lot of work for nothing, or else incur a lot of blame in charging for it.

MR. M. N. BAKER: At the beginning of the report the statement is made that "It is now generally accepted that adequate supervision of plumbing as regards all sanitary features should be vested in the public health authorities." It may be that the majority of opinion is that way; but the more progressive opinion, both as regards health and as regards the broader problem of municipal administration, is against having the Health Board in control of plumbing. The speaker's own experience and observation is, that plumbing should be in charge of the Building Department.

All see the evil effects of the multiplication of inspection. It is now conceded pretty generally by those who are posted on the subject that plumbing has comparatively little relation to health. It is highly desirable, from a health standpoint, that those matters which have little relation to health should be taken away from the Health Department, and put where they can be handled to better advantage.

It is very troublesome to every one who has to do with building operations to have to go to the Health Department, and various other departments, before they can get the permits and the inspection that is required before a new house can be built and occupied or before repairs to an old one can be made. The speaker would, therefore, dislike to see this report adopted in so far as it carries approval of the idea that the plumbing should always be in charge of the Health Department. If, as has been suggested, the Water

Department also is to exercise control, these inspections are multiplied, which is certainly very undesirable.

MR. J. N. CHESTER: The speaker did not hear all of the discussion of the report, but heard what Mr. Salmon said, and can put his O. K. on same and add his weight to the arguments that were advanced. He feels just as Mr. Salmon expressed himself in regard to this question, that water departments and water companies do not want to become mixed up with the plumbing, at least beyond the meter. He foresees the difficulties that his experience indicates will be met with. Imagine the conflict with the labor unions; the rules and regulations that would soon be imposed upon you would force you out of business.

PRESIDENT HILL: There is one aspect of plumbing supervision which has not been referred to specifically in this discussion. Many, if not most, of the complaints of lack of pressure attributed to deficiency of mains are really due to deficiencies in the design of the house plumbing. All know that the object to be sought from the public corporations' viewpoint is the elimination of friction with the consumer. The majority of complaints and disagreements which arise between the public utility and the public at large are not the result of unjust rates so much as they are of lack of service, and whereas a city water department may be immune to rate adjustments as a result of poor service, these departments should give the best service possible because the primary motive in establishing them was the desire on the part of the public to get good service. Service conditions will never be satisfactory unless there is some civic agency through which a proper and careful specification for plumbing is devised, a specification which requires a given size of pipe to supply a given number of openings. That is the line on which the speaker had hoped this committee would work with a view to establishing the relationship between size of pipe and the number of openings, so that when a builder designed a building he would have a definite basis on which to design his plumbing system and would not be required to use the haphazard methods which are now in vogue.

Perhaps this function should not be assumed by the water department, but the water department in coöperation with the building department, and if necessary the Health Department, should

formulate such a set of rules, and where could this work be initiated to better advantage than in this Association?

On motion of Mr. J. N. Chester the report of the Committee on Standard Plumbing Code and Control of Plumbers was referred back with the request that it be carried further and revised in accordance with the suggestions brought out in the discussion.

PRESIDENT HILL: Now we have another matter before us, the letter of the Clarksburg Water Works and Sewerage Board, contributing $25 annually toward furthering the interests of this Association. The Chair should like to know what disposition to make of that matter?

The letter was read, as follows:

As a signal mark of appreciation of the splendid work accomplished by the American Water Works Association, through its highly efficient officers and the personnel of its membership throughout the country, the Clarksburg, West Virginia, Water Works and Sewerage Board has ordered that the sum of $25 be contributed annually toward furthering the interest of the association.

We have been benefited by the proceedings of the association and have received valuable courtesies through many distinguished members of the association of very great assistance in the operation of the department.

Very respectfully,

SCOTLAND G. HIGHLAND,
Secretary and General Superintendent.

On motion of Mr. Dow R. Gwinn, the contribution was accepted with the thanks of the Association.

MECHANICAL ANALYSIS OF SAND

MR. GEORGE W. FULLER: Mr. Burgess is not here. The committee would like to report progress. This is a pretty complicated problem. There are many ramifications, and we desire to proceed slowly. We have taken up the matter with the Bureau of Standards in Washington, and if agreeable, we would be glad to be given the opportunity to proceed with this complicated matter somewhat further.

MR. EDGAR M. HOOPES, JR.: With regard to the work of the Committee on Mechanical Analysis of Sand, the American Water Works Association was represented at a conference held at the Bureau of Standards in Washington, on April 30th, last.

At the conference there were present representatives of practically every industry in which fineness tests are required.

After considerable discussion of the feasibility of establishing a standard screen scale, two proposed standard scales, prepared by the Bureau of Standards, were considered.

The result of this action was that the conference expressed its preference for the adoption of a standard screen scale based on the metric system and having the 1 mm. opening as a unit, together with such slight modifications as might be found desirable after consultation with manufacturers and users of sieves. This action was taken as against screen scales based on Tyler series and the so-called English series, proposed by the Bureau.

The conference further expressed its preference in the matter of a standard scale by voting that the standardization and rating of any scale in the series should be in accordance with the actual size of the opening instead of the size of separation or mesh number.

In addition a subcommittee of five was appointed by the Bureau of Standards to carefully consider the details of the metric series, paying special attention to wire diameters, tolerances and important questions of manufacture, and to report back at some convenient time to the Bureau of Standards.

Your committee has felt that it would be unwise at this time to present a written report of its findings in the matter until the final results of the Bureau of Standards are made available.

We wish to state, however, that the matter of a standard screen scale is progressing rapidly toward a definite solution, and probably within the next year we will have such a standard which will be employed by all industries using a fineness test. The present confusion existing in this matter will thus be remedied.

MR. GEORGE W. FULLER: Assuming that the Bureau of Standards does effect an agreement among all those interested in sizing sands, then from the viewpoint of the water works interests, and more particularly of those engaged in sizing sands for filter beds, the development of the last twenty-five years should be translated in terms of the new ratings so that there will not be an abrupt break in the records, and it would be well for this committee to be instructed as to the scope and purpose of its work. The speaker is not sure in his own mind as to just what the scope is; and would like to have that brought clearly to the attention of the Association.

MR. PAUL HANSEN: The speaker happened to be present at the discussion of Mr. Burgess's paper, and his recollection is that what Mr. Fuller referred to is very clearly within the scope of this committee.

MR. GEORGE W. FULLER: The work of our committee in a certain sense has to await the decision of the Bureau of Standards, which is to take into account a scheme of sieving sands so that it will meet with the views of those interested in all lines of work. It is impossible to say how long a delay that may mean.

PRESIDENT HILL: We do not wish to curtail the scope of the work of this committee. It should be largely a matter of judgment on the committee's part as to how far it goes and how soon it will make a final report. This is a question that we would like to get definitely settled in some way; and if time is to be gained in the long run by delaying present action, it might be better to do so.

MR. LEONARD METCALF moved that the committee be continued and that it be the sense of the Association that the scope of the work of this committee should include the line of inquiry suggested by Mr. Fuller.

The motion carried, and so ordered.

MR. EDGAR M. HOOPES, JR.: Before leaving this question there is one other point that should be brought to the attention of all, and that is that the Bureau of Standards is looking into the objections, from a manufacturing standpoint, to constructing this screen scale founded upon absolutely scientific principles. The ratio of the wires and the actual size of the opening is one that should be standardized; and it is a question whether it will be necessary to have wires specially drawn, that is one of the questions that will come up, and one of the reasons why there will be a slight delay; but it is very important work, and one that we can well afford to await the proper settlement of.

COMMITTEE ON ELECTROLYSIS

To the President and Members of the American Water Works Association:

Your Committee on Electrolysis begs leave to submit the following report:

Your Association has affiliated itself during the past year with the Joint National Committee on Electrolysis and appointed three members on this joint committee. In view of the fact that the Joint National Committee has in preparation a preliminary report reviewing the status of the electrolysis situation, your committee will confine its report to the following brief statements of fact and of the stand which it believes this Association may properly take:

1. An increasing amount of damage from stray electric currents is occurring on the underground water piping systems in many localities throughout the country where adequate measures have not been taken to reduce this damage.

2. The principal and generally the sole source of stray electric currents causing this damage is the single-trolley direct-current electric railways employing the running tracks in contact with earth as part of the return circuit.

3. Inasmuch as such electric railways are the chief and generally the sole sources of stray currents causing the damage, and as the owners of such railways have no right to so operate their railway system as to cause serious damage to the property of others, it is the duty of the owners of these railways to provide measures for reducing this trouble by removing its cause as far as this is practicable.

4. Experience extending over many years in foreign countries and over ten years in this country has shown that methods which are practicable and economical can be applied to electric railway systems which will remove acute dangers from stray currents and which will very greatly reduce the danger in all cases where bad electrolysis conditions exist, and in most cases will reduce this danger to negligible amounts.

5. Your committee finds that mitigating methods applied to underground water pipes fail to attack the real cause of the trouble, and when used as the sole mitigating means fail to give adequate and permanent relief. Your committee further believes that mitigating methods should be applied to underground pipes, if at all, only in special cases and only after adequate methods of minimizing the production of stray currents have been applied to the railway system.

6. Your committee disapproves as not only inadequate but frequently also as dangerous such metallic connections from underground water pipes to the railway return circuit as cause these pipes to become a substantial part of the railway return circuit. Such

connections greatly increase current flow on pipes, and while they may afford local protection they generally distribute electrolysis troubles to other localities where these are more difficult to find, and thus frequently give a false impression of immunity. Your committee therefore believes that metallic connections from water pipes to the railway return circuit should never be applied as the principal means for electrolysis mitigation.

7. Your committee believes in view of the fact that the railway companies in common with the pipe-owning companies are public utilities operating under public franchises and utilizing city streets, that it is the duty of both of these utilities to coöperate in order that the causes and extent of any danger from stray current can be more readily ascertained and the problem can be attacked along broad engineering lines.

Respectfully submitted,

ALBERT F. GANZ, *Chairman.*
CHARLES R. HENDERSON,
DANIEL D. JACKSON,
ROBERT H. JACKSON,
EDWARD E. MINOR,
Committee on Electrolysis.

New York City, June 7, 1916.

After presenting the foregoing report Professor Ganz remarked as follows:

Gentlemen, your President has asked for a few words in explanation of the report. The Joint National Committee was formed three years ago and has now the following membership: The American Water Works Association, three representatives; the American Gas Institute, three members; the Natural Gas Association, three members, (You see, therefore, that there are nine representatives from these three strongest national pipe-owning companies in the country represented on that committee); the American Telephone and Telegraph Company, three representatives; the National Electric Light Association, three representatives; that makes six representatives of the largest lead cable-owning concerns in the country, and their interests run with the interests of the pipe-owning companies because they are often more subject to attacks of electrolysis from stray currents than are the owners of pipes.

There are two railway associations represented, the American Electric Railway Association, and the American Railway Engineering Association, each by three representatives, making a total of six. Then there are three representatives of the American Institute of Electrical Engineers, which is fairly considered a neutral body, and one representative from the Bureau of Standards, Doctor Rosé, Chief Physicist of the Bureau of Standards.

You will see, therefore, that there is a preponderance of representation from interests that have properties likely to be damaged by electrolysis.

The speaker is very glad that the American Water Works Association has affiliated itself now with this Joint National Committee, because it makes the representation of owners of underground structures subject to the electrolytic damage that much the stronger.

Mr. Dabney H. Maury said that instead of the pipe owners being in the majority on the National Committee, as alleged by Mr. Ganz, the contrary would be true; because of the community of interests between gas, telephone and electric companies; which would make the water works interests hopelessly in the minority.

He warned the Association against allowing itself to be misled in this respect or to be committed in any way which might be detrimental to its interests.

He also pointed out that the Committee's Report, while apparently like that of the previous Committee on Electrolysis, whose recommendations had been adopted for fourteen years as the official attitude of the Association, yet contained limitations in a number of clauses the effect of which would be to change completely the Association's attitude.

Mr. Leonard Metcalf spoke in support of Mr. Maury's stand.

Professor Ganz explained that the representatives could not have power of authority to commit the Association to anything, but that they would attend the meetings of the Joint Committee and report to the Association any proposed action, and that it would rest with the Association to accept or reject any recommendations made; also contending that the American Water Works Association should be represented in order to know what was being considered by the Joint Committee.

After discussion by Carleton E. Davis, Allen Hazen, President Hill, D. D. Jackson, H. E. Keeler, R. E. Milligan, Morris R. Sherrerd and W. F. Wilcox, the report was by resolution *received*, ordered printed in the minutes, and the committee continued for further consideration.

COMMITTEE ON CITY PLANNING

INTRODUCTION

City planning is the application of foresightedness to municipal matters, particularly those relating to its physical layout. Water works engineers have been working along city planning lines whenever they designed a system looking toward the future, but the work of the water works engineer is often criticized by engineers of other specialties because the former has not taken what the others consider due account of the problems which the latter are called upon to solve.

City planning is simply joint planning so as to provide a better solution of the various problems of the several specialists for the greater good of the greater number. No specialist may be absolutely satisfied nor able to secure the ideal arrangement for his own work, but the public at large may often be benefited by concessions on both sides. Thus the question of the best location for pipes in streets would be settled in one way if no pipes existed except those of the Water Department, whereas the facts usually are that numerous other subsurface structures must be considered so that the water mains cannot be laid exactly in the middle of the street, which seems to some the ideal location. Many other similar questions arise.

The street system, in so far as it has to do with block sizes, affects the economics of the size and arrangement of distributing mains. It would doubtless be productive of interesting results to investigate the most economical arrangement for a square city, laid out with blocks 200 feet square and, also, one with long rectangular blocks 200 feet by 800 feet, as in New York City.

The width of street determines whether it is more economical to install a distributing main which feeds both sides of the street, or two mains to feed the two sides separately. A special report showing the economics of the case and where the dividing lines occur would doubtless be of interest.

The question of carrying service pipes to property lines at the time of repaving or original paving of street, is of interest in city administration and, indirectly, in city planning. Also, the question of trunk mains through the streets and distributing mains on one side or both sides under the sidewalks must be considered in connection with the question of opening the street surfaces from time to time to make repairs and to install new connections.

The plotting of suburbs is a vital item in city planning, and in connection with it might well be considered the theory of extension of water mains into suburban districts,—the installation of large mains at the present time, as against a small main at the present moment, with either an enlarged main at a later date or the installation of additional service or trunk lines.

What period into the future should be considered in estimating pipe sizes is an item of much interest to water works engineers and, therefore, a proper element in planning cities for the future.

The question of pipe galleries and the use of them for water mains is of interest and has been made the subject of investigation and report.

The location of water mains in the street cross section, in connection with the standardization of location of all subsurface structures, has been investigated to some extent and reported upon, but deserves much more study.

The subject of subsurface versus post hydrants is of interest in city planning and has been made the subject of investigation through a questionnaire, a résumé of the answers to which is included in this report.

In connection with obstructions on the sidewalks, the location of hydrants is of importance; and the advantages and disadvantages of installation at corners, in the centers of blocks, on the curb line, against buildings, or in recesses in buildings, etc., have been considered.

The aesthetic design of pumping stations, towers, tanks, dams and other structures is a matter worthy of careful investigation and concerning which an exhaustive collection of photographs should be secured, together with estimates of the difference in cost of artistic and inartistic designs for as many typical cases as possible.

In connection with the aesthetic design of power plants, consideration could profitably be given to the question of the erection of chimneys versus the use of forced draft with practically no chimney to affect the view.

The joint use of areas reserved for protection of reservoirs or drainage basins for park purposes also has been considered, and the parking and park use of areas around pumping plants and other structures which are located closer to congested centres should be discussed.

The economics of the case should be investigated to discover how far it may be wise to combine park use and water works properties, measured perhaps by the number of people who would use the parks if so arranged.

The question of boulevards and parkways over aqueducts and pipe lines might well be investigated.

The establishment of parkways leading to large water works structures as terminal features has been investigated. An excellent example is the Bronx Parkway leading to the Kensico Dam of the enlarged water works system of New York City.

With reference to the joint use of water works property for park use as well, study should be made of the limitations which must be placed upon such park use because of the necessity of conserving the quality of the water where contamination is possible.

The Committee on City Planning has been somewhat hampered because of the inability of some of its members to carry on the investigation work outlined for consideration. The combined use of properties for water works and park purposes, the aesthetic treatment of water works structures, and related questions have been considered by Mr. Armstrong and that portion of the report dealing with those points is of his production. The questions of pipe galleries and the location of mains in the streets have been examined by Mr. Burdick whose report upon that subject is incorporated in this document. The remaining items in the report have been discussed by the Chairman of the Committee.

THE AESTHETICS OF WATER WORKS DESIGN

BY JAMES W. ARMSTRONG

Property acquired in connection with the water supply of cities may be divided into two general classes. The first and most common is the class of real estate purchased for use in connection with the erection of the various structures required for the operation of the system.

No water works system, however small, can be operated without some such holdings; they are generally located within or near the city limits, and surround pumping stations, filter plants, reservoirs and miscellaneous buildings. The area of property of this character owned by different cities varies greatly, depending largely upon the size of the city. It ranges from barely enough to hold the structures to several hundred acres.

The second class is usually held only by cities whose water supply is obtained from some distant source, and where it becomes necessary to secure large tracts of land for impounding reservoirs and for the protection of the water sheds that supply such reservoirs. New York, Boston and Baltimore are examples of cities holding land for such purposes.

It is the practice in many cities to permit the public to use water works property for one purpose or another, and whenever there is no danger in doing so, there is no reason why the custom should not become more general. Public property should be used for the greatest good of the most people, and if water works property can be made to serve the double purpose of usefulness and giving pleasure, it should be so used, but as a pure drinking water is a city's greatest asset, all other uses should be made subservient to that of maintaining an absolutely pure supply. Any use which would create a suspicion in the public mind that the water is being contaminated should, if possible, be avoided.

The number of people using the large parks in some of our cities is comparatively small, owing to their inaccessability, and those who do use them are largely of the well to do classes. The poorer people cannot afford the car fare and the time required to visit such parks very often, hence the improvement and planting of little plots of ground would come as a real boon to many people in the vicinity of such places. Even where they are too small to be used as parks, the beautifying of all the spare ground would add greatly to the attractiveness of a city, and as good habits like bad ones are more or less contagious, might stimulate other property holders to beautify their places. In small cities where there are no parks, water works property could be made to serve as the beginning of a park system.

As the two classes of property require different treatment and development and as the public would evidently make different use of them, it is thought best to consider each class separately.

Taking up the first class of property it will be found that water works pumping stations are usually a matter of some interest to a community and the type of architecture and the surroundings of the buildings have a very decided influence on the neighborhood. The great variation in size, location and surroundings of pumping stations makes it very difficult to offer any very definite suggestions for a proper treatment of the grounds surrounding them. In the larger cities, the buildings are sometimes situated in almost hopelessly ugly surroundings, others are very massive and have very little ground around them. In such cases not much can be done to add to their beauty. There are, however, cases where buildings have sufficient ground around them, if properly treated, to add greatly to the attractiveness of the place.

It is quite common to see a pumping station surrounded by a grass plot without any other growing thing in sight, whereas a few shrubs planted adjacent to the walls would soften the harsh building lines and form an agreeable junction with the lawn.

When large spaces are available, a formal garden, or a semi-formal garden is sometimes employed. Even where the architecture and surroundings are forbidding much can be done to beautify the place, often at a very small outlay of effort and money. A wall or a fence can be built around old storage yards to conceal heaps of cinders and piles of pipe and scrap iron, and then if the enclosure be hidden by planting shrubs and vines and a little grass space be left in front a beautiful effect can be secured and a neighborhood may be transformed.

It hardly seems possible to consider the treatment of buildings and grounds around them separately. In designing buildings they should of course be made appropriate to the surroundings. The writer has seen beautifully designed pumping stations with every architectural detail carefully worked out, that were entirely out of harmony with their country surroundings, because they had the appearance of having been transplanted from a city street. It is a pretty safe rule in planning buildings, that have any appreciable amount of ground around them, to rely on the form and outline of the building for beauty rather than any added ornaments. Simplicity in architectural detail is often equally consistent with beauty and economy. Buildings located in closely built up cities are not considered as coming within the scope of this paper.

Features to be avoided are low flat building lines with monoto-

nous architectural detail, sameness of color and architectural details that are obviously of no service. Straight lines are seldom found in nature, almost never in a horizontal position, therefore, when a building is to be treated in any but a strictly formal manner, it is well to break the sky line by using hipped and pointed roofs and the ground line by planting shrubs adjacent to the buildings. Angles in building walls and projecting roofs cast pleasing shadows. Well designed arches give a sense of lightness and of strength and are always beautiful when used appropriately.

Nature uses both form and color for beautifying objects, usually both. The architect should use both if the best effects are to be secured in building. Strong colors are the most beautiful, but they should be sparingly used. Sometimes pleasing effects are procured by strong contrasts in color, but better and more lasting results are usually obtained by combining moderately contrasting, but harmonious colors. Red, yellow and brown tones are warm and are generally pleasing. Beautiful effects can be secured in gray by combining it with the right colors, but artistic handling is required to get proper results. Gray used alone in large buildings is cold and harsh in feeling. Large buildings built of gray stone with trimmings painted to match produce a very unpleasant effect upon the passer-by that would be considered good looking buildings if roof and wood work had been of some other color.

Local material could often be used to better advantage than is commonly supposed. The writer has seen six or eight large buildings which, though built of the same brick, were very different in color and appearance. The grading of the brick, the kind of mortar and the method of laying, all had decided effects. The most pleasing shades of color were secured by using the entire run of kiln bricks from light red to nearly black. When laid with a wide raked out joint in cement mortar, the difference in color seemed to blend into one harmonious soft shade.

Displeasing effects were produced by selecting bricks of a uniform shade and laying them with a close struck joint in poor quality of lime mortar.

The grounds around filter plants are generally much more extensive than those around pumping stations, and consequently afford better opportunities for treatment. With judicions planting, the construction of few good driveways and proper consideration given to the architectural treatment of buildings, a filtration plant should be-

come one of the most attractive places in a city. This is especially so in connection with filter plants employing open reservoirs, as in themselves, they often add much to the attractiveness of the surroundings. Water is always pleasing even when it is contained in concrete basins adjacent to a group of buildings.

The use of open reservoirs of course requires greater precaution to guard against the pollution of water. Probably the most effective protection is obtained by the type used in the coagulating basins of Louisville and the New Compton Hill reservoirs at St. Louis. In these reservoirs, concrete walls rise vertically to a height of from 10 to 12 feet above the ground level. These walls are treated architecturally with panels and pilasters, but such treatment is formal and the height of the walls cuts off any sight of the water.

In order to relieve the bareness of blank concrete walls and to add to their stability, earth embankments have been made around the walls of the coagulating basins at New Orleans and at Baltimore. The earth is carried within three feet of the top of the wall and the exposed portion acts as an effective barrier to prevent contamination and at the same time permit ready inspection of the water.

At Baltimore a portion of the driveway is high enough to enable persons riding or walking to overlook the basins. By planting a hedge of low growing shrubs such as barberry around the wall, it can be practically hidden from view and a beautiful effect obtained. The hedge also prevents people from getting within reach of the water, but does not obstruct the view.

A very common type of distributing reservoir, but a type very difficult to treat aesthetically, is one built on the top of a hill whose sides are formed by an earth embankment. Such basins unless they are surrounded by roads are generally very well safe guarded against pollution, as the only water that can possibly enter them is that falling on the inner slope and a portion of the crown.

The old reservoir at Minneapolis, the Crescent Hill reservoirs at Louisville and the Forbes Hill reservoirs at Quincy, Massachusetts, are of this type, but differently treated.

At Minneapolis the entire inner slope is paved and surrounded at the top by a heavy flat coping course of stone which supports a heavy iron fence. A 20 foot macadam roadway whose inner edge is flush with the top of the coping and whose outer edge is somewhat lower, surrounds the reservoirs. The outer slope of the embankment is $1\frac{1}{2}$ feet to 1 foot.

The Crescent Hill reservoirs are also paved on the entire inner face and are surrounded by a heavy stone curb and iron fence. Instead of a driveway it has a wide cement walk adjacent to the curb, but 8 or 10 inches below its top the outer slope is much flatter than at Minneapolis.

The Forbes Hill Reservoir is paved on the inner side within 2 feet of the top. There is a 6 foot granolithic walk in the center of the crown, and the remainder of the exposed surfaces are covered with grass. As far as the protection of the water is concerned there is little to choose between the three reservoirs, the one at Louisville perhaps has a little in its favor. The Forbes Hill Reservoir, however, has a decided advantage over the other two in the matter of cost and appearance. The more or less formal treatment of such reservoirs can hardly be avoided, but the writer believes that if half the money that is spent on expensive fences and cut stone curbs were spent in flattening the outer slopes and in making such plantings as the topography permits, much would be done towards overcoming the decidedly artificial look that most of such reservoirs have. The mere rounding of the edges at the crest and top of the slope would in many instances be a relief.

Another common type of reservoir and one that offers possibly the greatest opportunities for beautiful treatment is formed in a valley or ravine by damming up the lower end. Such reservoirs are generally surrounded or are partially surrounded by a driveway, and therefore, require careful consideration in order to preserve the purity of the water. When a community wants the best possible treatment of such a reservoir it is desirable to secure the advice of a landscape architect. It is believed the treatment should be as natural as possible and that all artificial details be avoided. Nature generally comes to the assistance of the engineer in planning these reservoirs as, the outlines are generally irregular and are seldom displeasing. When engineering works are necessary a few simple expedients will serve to maintain the natural appearance. A geometrical or stiff outline should always be avoided. A succession of circular curves joined by tangents gives a stiff and unnatural appearance. Straight lines, especially when they form angles with other straight lines, are displeasing. An earthen dam can be built on a curve with the inner sides of the curve facing either towards or away from the water and be fully as stable as one built on straight lines.

Low growing dense shrubs planted near the water's edge do not contaminate the water, but on the contrary serve as an efficient barrier and prevent leaves and paper from reaching the water.

Lake Montebello, a distributing reservoir of Baltimore, is thoroughly protected and in a manner approximately natural. The lake is paved with rip rap slightly above the water line; from the edge of the paving to the crest is a narrow grass slope, and on the crest of the embankment, which is slightly above the roadway surrounding the lake, is a dense hedge of pyrus japonica about $3\frac{1}{2}$ feet high. Water falling upon the road is removed through catch basins and a system of tile drains. The particular merit of this treatment is the splendid protection afforded the water without the erection of a fence or a heavy curb.

The storage reservoirs built in connection with the filter plant at Cincinnati are paved from the top to the bottom and are surrounded by a heavy curb, and outside the curb by a paved driveway. The protection is excellent and the outlines of the reservoirs are generally pleasing, but there is a harshness due to much exposed concrete that is only partially relieved by the beautiful hills in the back ground.

Spot Pond of Boston and Fresh Pond of Cambridge are reservoirs having a near natural treatment in some details very pleasing, but it is necessary at both places to patrol the shores constantly to prevent contamination of the water.

When appropriate land is held that can be readilly reached, golf links can sometimes be maintained to the mutual advantage of the water boards and the parties using them. In Baltimore a large tract of land adjacent to Lake Roland is turned over to the Baltimore Country Club to be used for golf grounds. The club at its own expense maintains the grounds in excellent condition and relieves the board of all responsibility in the matter.

These golf links are extensively used whenever conditions permit and no objection has been found to the use of the ground for that purpose. In fact a large section of ground which is naturally beautiful is kept in much better condition than it would otherwise have been, and is a source of pleasure and added health to many people. If the ground was not so used it would be frequented by no one and the only useful purpose served in holding it would be to prevent its being occupied by objectionable institutions which contaminate the water supply.

The Louisville Water Company owns a tract of about 100 acres of ground which surround their river pumping station. This tract was at one time used as a public park, but is now rented to a country club which maintains a club house and golf links on the property and uses the old reservoir for a swimming pool.

PIPE GALLERIES AND THE LOCATION OF MAINS

BY CHARLES B. BURDICK

The committee sent the following questions to a large portion of the membership of the Association, relating to the location of water pipes.

1. What rule, if any, governs the location of water pipe in your streets?
2. Do you lay pipe in the parkway between the curb and the sidewalk in residence streets, and if so, under what circumstances?
3. If so, what precautions do you find necessary to prevent injury to the trees?
4. If a pipe is laid in the parkway on one side of the street only, what plan do you adopt for feeding the services on the far side of the street?
5. Is there any standard location for all other sub-surface structures? If so, please furnish diagrams.
6. Are house connections installed at the time main is laid?

The replies to these questions are tabulated below. In general the replies brought out the fact that the practice of locating the sewer in the center of the street is almost universal, with one side of the street reserved for gas, and the opposite side for water. In general, conduits for wires are located close to the curb line.

The use of the parkways for pipe in residence districts seems to be decided on the basis of economy at the time the pipe was laid. Most of the replies indicate that the main is laid in the street unless it is paved, in which case the main is frequently laid in one or both parkways depending upon circumstances. The use of two pipes seems to be quite common on very wide streets or in business streets containing car tracks.

The practice of laying services to the curb line in advance of new pavement seems to be on the wane. A number of cities report the abandonment of this practice.

Answers to questionnaire regarding water pipe locations

	RULE GOVERNING LOCATION OF WATER PIPE IN STREETS	PIPE IN PARKWAYS AND UNDER WHAT CIRCUMSTANCES	PRECAUTIONS TO PROTECT TREES WHEN LAYING PIPE IN PARKWAYS	WITH PIPE IN PARKWAYS HOW IS FAR SIDE OF STREET FED	HAVE YOU A STANDARD LOCATION FOR ALL UNDERGROUND STRUCTURES	ARE HOUSE CONNECTIONS INSTALLED WHEN MAIN IS LAID
Rochester, N. Y. E. A. Fisher, Consulting Engineer	Between gas and sewer	Yes on wide streets	Tunnel under roots	Lay another pipe	General rule beginning at curb, electric, gas, then water lay two water pipe where double car tracks	In advance of pavement
Chicago, Ill. John Ericson, City Engineer	8 to 10 feet north and west of street center	Yes on double streets or very wide streets	As directed by city forester	Two mains	No	In advance of pavement
Toronto, Ont. F. A. Dallyn, Private Sanitary Engineer	17 feet from street line 2 mains on business streets	Two Mains in car-line streets	Trees not harmed in parkways	Services carried across street	No	No
Auburn, N. Y. J. Walter Ackerman, Chief Engineer and Superintendent	10 feet from street centers	No—other utilities use this space			No	
J. N. Chester, Chester and Fleming, Engineers	At least 6 feet from from curb	On paved streets		Two mains one large one small		
H. C. Hodgekins, Consulting Engineer	So far as possible a uniform distance from curb	Yes if parkway permits		Generally services cross the street		In advance of pavement
Raleigh, N. C. E. B. Bain, superintendent	10 feet from East and North curbs					

Minneapolis F. W. Cappelen, City Engineer	North and west sides of street	No			Sewers center; conduits two sides near curb. Water 16 to 30 feet from curb depending on street width. Gas on opposite side of street	No
St. Louis Frank L. Wilcox		On streets already paved		Two pipes		About one-half
New Orleans Geo. G. Earl, General Superintendent		Frequently to save cost		Services "jacked" across the street—also under pavement	Sewers center; storm drains near curb. Gas and water between	No except for user
New York Wm. W. Brush and H. B. Machen	North and west sides of street, 6 to 9 feet from curb	Residence streets pavement where trees permit	Box to keep earth away	Two mains on streets over 80 feet	General conditions. Curb to 4 feet electric. Gas 6 feet from curb. Water 9 feet from curb. Sewer in center	No
Utica, N. Y. Consolidated Water Co.		Yes	None		No	In advance of pavement
Milwaukee, Wis. H. P. Bohmann, Superintendent, Water Works	North and east sides of street	Yes on double streets				In advance of pavement
Philadelphia A. H. Kneen		In exceptional cases		Two pipes, one large one small		
Baltimore, Md. James W. Armstrong, Filtration Engineer		In suburbs to avoid paving	Offset the pipe	Two pipes in most cases		
Winnipeg, Man. Thos. H. Hooper, Superintendent, Water Works	14 feet from east and south street lines 2 mains on very wide streets			Bore under the streets and shove services through		In advance of pavement

Answers to questionnaire regarding water pipe locations—Continued

	RULE GOVERNING LOCATION OF WATER PIPE IN STREETS	PIPE IN PARKWAYS AND UNDER WHAT CIRCUMSTANCES	PRECAUTIONS TO PROTECT TREES WHEN LAYING PIPE IN PARKWAYS	WITH PIPE IN PARKWAYS HOW IS FAR SIDE OF STREET FED	HAVE YOU A STANDARD LOCATION FOR ALL UNDERGROUND STRUCTURES	ARE HOUSE CONNECTIONS INSTALLED WHEN MAIN IS LAID
St. Louis, Mo. Francis T. Cutts, Assistant to Water Commissioner	Usually 22 feet from Property line	In exceptional cases		Usually 2 mains, in some cases tile pipes to shove services through	Gas south and east Water north and west sides of street	Practice abandoned
Wilkinsburg, Pa. W. C. Hawley, Chief Engineer and General Superintendent Pennsylvania Water Co.	North and east side street 3 to 10 feet from curb	When required by city		Have used tile pipes		No
Davenport, Ia. Dav. Water Co., C. R. Henderson, Manager	12 feet from north and west curb	No			Gas in side opposite to water main Sewers in center—Other utilities in parkway or in alleys	In advance of pavement
A. Prescott Folwell	North and east sides of streets usually 5 feet from curb					

UTILITY GALLERIES

In the larger cities of this country the growing necessity for the tearing up of pavements in the construction and maintenance of the utility distribution systems and their service connections has led to several studies looking toward galleries beneath the streets or sidewalks for the purpose of accommodating such utilities as water, gas, electricity, telegraph and telephone. Although the practicabilities of this matter have not been determined fully, the studies indicate that it is essentially a large city problem. The costs involved are probably not warranted in the smaller cities except in special cases.

The need for a service of this kind has been most evident in the business districts of the larger cities. In Chicago for instance, the inner zone or principal business district contains 21 miles of streets and about 220 miles of utility lines, or an average of more than ten lines in each street. To a large extent this has been the result of the growth of the district both as regards the area developed and lately, the increasing height of the buildings with the consequent demand for increased service. Some of the more congested streets contain as many as nine gas mains. Most of the streets contain five or six gas mains, and in many of the streets the water mains are duplicated.

As high as eighteen pipe or conduit lines are accommodated between curbs 38 feet apart. As these conduits have been laid at different times, they are obliged to pick their way among conduits previously laid. At intersecting streets there are the added facilities for the interconnection of intersecting lines, vaults for the accommodation of valves, and municipal fire hydrants. There are certain congested street intersections in Chicago where as high as forty-one iron manhole covers are visible on the street surface.

Although the under-street congestion in New York, Chicago and other large cities is comparable or even exceeds the congestion above the surface, there is practically no American experience in utility galleries, socalled, for the accommodation of the subsurface utilities. We must look to Europe for actual accomplishment, and outside of London and Paris, the European experience has been extremely limited.

The London experience indicates that utility galleries as applied to streets where the investment in utilities is already made is not

financially practicable, but where new streets are opened, such galleries are warranted and the London practice is to build them, renting space to the private corporations. London has 8 miles of galleries and fifty years' experience in their operation.

The conditions in the large American cities differ from the conditions in London as to the height of the buildings, the greater use of the utilities, and particularly the rapid growth in the use of high buildings. This growth has by no means stopped, and therefore, the present facilities must be greatly increased hereafter, involving the inevitable opening and reopening of the streets, not to mention the frequent street openings for repairs and the connection of services.

The following résumé of the European experience is the result of an inspection trip by Mr. Louis A. Dumond, Secretary-Engineer for the Chicago Commission on Down-Town Municipal Improvements. This inspection was made immediately prior to the outbreak of the war in 1914.

FOREIGN EXPERIENCE

It appears that in the larger cities of Germany where the utilities are all municipally owned, the pipes and conduits are generally accommodated under the sidewalks. This space is not occupied by the cellars of buildings and the pipes and conduits are buried under tile sidewalks which are so constructed that the tiles may be removed locally for the purpose of access to the utilities by digging. It is possible to accommodate utilities in this manner through the careful allotment of space and the maintenance of accurate records of the utilities so buried. By this procedure the street pavements are not disturbed, but it would appear that the German procedure in a large measure simply transfers the principal objections to American practice from the street to the sidewalk.

In Paris the sewers are built exceptionally large, permitting of direct access for cleaning and the connection of premises through passages accessible from the sewer. The sewers also house the water pipes and the wires for the distribution of electricity and telephone service. The gas pipes are buried in the street or in the space adjoining same. It has not been considered safe in Paris to carry the gas pipes within the sewers, although space is available. No evidence could be found, however, that the procedure has been

tried. All the sewers in the business district, and all the main sewers throughout the other districts of Paris are thus exceptionally large as described. Short lateral sewers only are so small as to prevent the ingress of workmen for the purpose of cleaning or for the accommodation of the utility services.

London is the only city in the world with extensive experience in underground galleries for the accommodation of pipe utilities. At the present time about eight miles of such subways and galleries are in use. They have been gradually developed since the construction of the first gallery in 1861, and are only built where new streets are opened up. It is stated that they have carefully considered the general application of gallery construction to the more congested streets of London, but that under London conditions, it is not financially practicable to build such galleries in streets previously equipped with the utility distribution systems. It is the practice in London upon the narrow streets, to build one subway near the center of the street, and upon wider streets two subways located near the curbs, with side connections of small dimensions through which the services may be connected to the adjoining property. The subways as built range in height from 7 to 9 feet, and in width from 8 to 16 feet, depending upon the requirements of the street. All utilities in London except sewers are privately owned. The galleries accommodate the water supply, gas, electricity, telephone, and in some cases, the sewers.

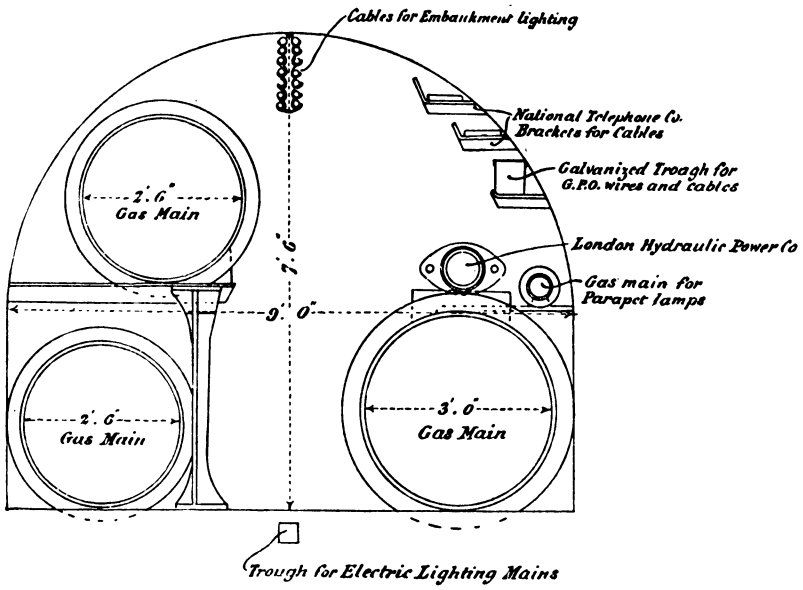
Figure 1 is a cross-section of the utility gallery upon the Victoria embankment. It is interesting to note the comparatively large space occupied by gas and the extremely small space occupied by the electric lighting, and it will be observed that cables are carried upon brackets and shelves.

The position of London as regards ownership of the public utilities is similar to that of most American cities. With the exception of a part of the water supply, and a few of the tramway lines, all public utilities are privately owned. Since the pipe subways are all constructed in new streets, the problem of forcing public utility companies to occupy the same is somewhat simplified.

In order to regulate the use of the pipe subways by the various public utility companies to provide a revenue, by-laws were passed by the London City Council in accordance with the Subway Act of 1893. These by-laws provide for the manner of securing occupancy in the subways for main conduits and services, access for

repairs, provisions for safety, and the maintenance of records. A scale of rentals is fixed for the different kinds of utilities. In the fixing of rates, a sharp distinction is made between water and gas companies having power to "break up the streets," and such companies as do not require the removal of pavements for repairs and the connection of services. The rates are said to be figured upon the basis of the money saved to the companies by the use of the

LONDON COUNTY COUNCIL SUBWAYS
VICTORIA EMBANKMENT



SCALE—3/4 IN. TO A FOOT

FIG. 1

pipe subways above what the cost would be were the utilities buried in the streets.

A distinctive feature of the English subways is the ample provision made for ventilation. This and the thorough system of inspection, and the more or less constant occupancy of the subways by the repair men for the various companies, apparently accounts for the freedom from accident due to gas explosions. In the Nottingham galleries which are typical of the galleries in London,

ventilation is furnished by iron grids in the roof of the subway at 50 foot intervals.

In addition to the galleries of London, other cities in Great Britain have utility galleries in a few streets as follows:

Nottingham, population 259,000, four subways with an aggregate length of 2,772 feet, St. Helens, three subways, total length 2,040 feet, and Glasgow where a short subway 345 feet has been in use since 1902. A short gallery is in use in Milan, Italy.

CHICAGO

Within the past year a utility subway has been built in Chicago adjacent to the new Pennsylvania Railway Terminal. This subway occupies slightly more than three blocks of length (1860 feet) in Canal Street and Monroe Street. The lengths and cross-sections are as follows (the dimensions refer to clear inside widths and heights), 1360 feet of subway 6 feet wide and 8 feet high; 500 feet of subway 4 feet wide by 8 feet high.

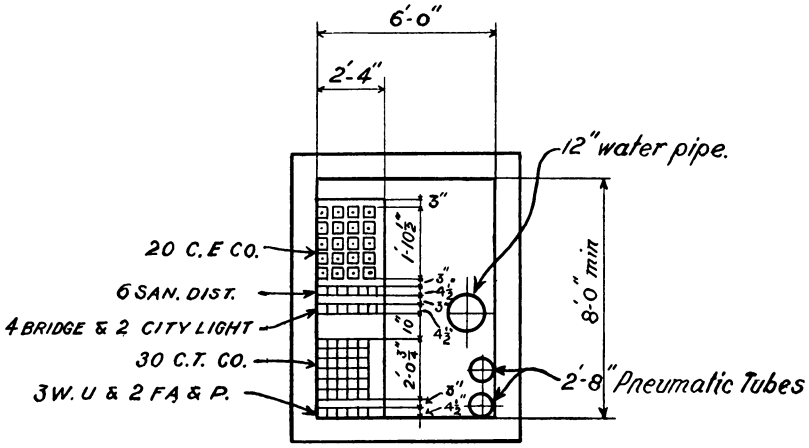


FIG. 2. CROSS SECTION CHICAGO SUBWAY

This subway is located under the sidewalk space, except in Monroe Street where the street near the curb is occupied, in a locality where the sub-sidewalk space has not been used in the basements of the buildings. Figure 2 is a typical cross-section. Inspection is particularly invited to the manner in which electric cables and also the other cables are accommodated in the subways. They are

all carried in tile ducts surrounded by concrete. This is the same construction generally pursued in Chicago where utilities are laid under the pavements. The cables enter the ducts only at the manholes near street intersections. Therefore, so far as the companies using cables are concerned, the subway thus occupied produces no saving in maintenance. The galleries contain or will contain the city water pipes, two 8-inch pneumatic tubes used in the transfer of mail between the railway stations and the postoffice, 20 ducts for accommodating the electric cables of the Commonwealth Edison Company, 6 ducts for the electric cables of the Sanitary District used in street lighting, 6 ducts for the accommodation of light and power for the city bridges, 30 ducts for the Chicago Telephone Company, and 5 ducts for accommodating telegraph wires.

A portion of this utility gallery was built by the city of Chicago, and another portion by the Pennsylvania Railroad Company. That portion constructed by the city was one block in length. It included the intersection of Canal and Madison Streets. Madison Street is a very busy thoroughfare with double car tracks. At this place the width of the subway is increased for the purpose of ingress, the interconnection of cables, etc. The aggregate length of gallery constructed by the city was 460 feet, and the cost complete was $16,003.03, an average cost of about $35 per lineal foot of gallery. It is said that about one-third of this cost was incurred at the crossing of Madison Street on account of special provisions for handling the street traffic during construction.

NEW YORK UTILITY GALLERY

It is understood that a short utility gallery was constructed in New York some years ago, but for some unknown reason it has not been occupied.

FINANCIAL PRACTICABILITY

The costs of utility gallery construction, including the expenditure for galleries, the removal of existing utilities and their relocation in the galleries, including the cost of cutting and reconnecting the services must be justified by the following prospective benefits.

(a) The saving in pavement openings for repairs and enlargements.

(b) A reduction in the cost of general pavement maintenance.

(c) A longer life for pavements.

(d) A reduction in the operating cost of some or all of the utilities.

(e) A saving in the cost of the future extension of the utilities.

(f) A reduced leakage of water and gas.

(g) The value to the public of good streets and decreased interference with travel.

As to whether the benefits are sufficiently great to warrant the costs involved is a special problem not only for each city, but for each locality. The question as to practicability cannot be answered broadly except in general that it concerns the congested districts of the larger cities only. Special occasions will arise where extensive improvements for other purposes involve the relocation of utilities, as in the Union Depot improvements at Chicago and the proposed transportation subways in Chicago. When such opportunities occur, the orderly relocation of the utilities in the best way possible should receive most careful study.

HYDRANT DESIGN AND LOCATION

BY E. P. GOODRICH

Concerning the subject of hydrant design and location, a total of 183 requests for information were sent out, to which questionnaires 24 answers had been received to and including May 22nd. This is 13 per cent. The replies were derived from men located in 18 cities but because of the fact that several of those answering the questions were consulting engineers whose practice was not confined to the locality of their address, the field covered is much wider than simply the 18 cities listed. Roughly, the territory extends from Toronto and Winnipeg on the north to New Orleans on the south, from New York City to St. Louis, as follows: Auburn, N. Y.; Toronto, Canada; Baltimore, Md.; New Orleans, La.; Raleigh, N. C.; Chicago, Ill.; Milwaukee, Wis.; Rochester, N. Y.; New York, N. Y.; Wilkinsburg, Pa.; Canton, O.; Davenport, Ia.; Pittsburgh, Pa.; Syracuse, N. Y.; Charlotte, N. C.; Philadelphia, Pa.; St. Louis, Mo.; Utica, N. Y.

Several of those to whom questionnaires were addressed courteously forwarded them to others for answer.

The following questions were submitted:

Questionnaire with reference to fire hydrants

Hydrants

Have you ever used subsurface hydrants?
If so, with what success?
If not, what is your idea about them?
In comparison with the supersurface type as to
Cost of installation
Cost of maintenance
Time for fire department to make connection
Liability to become frozen
Difficulty of identifying location of by fire department
Accidents to those stumbling over them
Proportion of hydrants to total sidewalk encumbrances
Necessary width of walk occupied with corresponding restriction to pedestrian traffic.
What is the best longitudinal location for fire hydrants with reference to street corners, at corner, center of block or elsewhere?
From point of view of
Fire department
Traffic police
Water department
What is the relative weight to be attached to each point of view?
What is the best lateral location for fire hydrants with reference to the sidewalk, at curb, just in front of building, or in recess in building?
From point of view of
Fire department
Water department
Traffic police
What is the relative weight to be attached to each point of view?

Comments concerning the use of sub-surface hydrants were received from 18 who had had no experience and 5 who had had experience. The universal distrust of this type of hydrant by those who had not had any experience with it was striking, while a majority of those who had had experience with it were favorable to its use. All of the favorable replies are included in this report and one or two typical answers of the negative variety. In general, those opposed thought that the post type of hydrant was preferable except in congested sections of large cities, no need for the elimination of the post being felt in towns or smaller cities up to populations of 40,000 to 45,000. Possible objection was also voiced to this type of hydrant by volunteer fire departments and the point was made that difficulty in identifying the location, especially in northern climates where the covers might be deeply overlaid with snow and ice, were the principal reasons against the use of the subsurface variety.

As to the best longitudinal location for fire hydrants, the opinion was almost universal that a location just behind the building line at the street corner was best, together with hydrants located near the centers of blocks in which alleys were to be found or the lengths of which were 500 feet and upwards in business districts and 600 feet and upwards in residence districts. The spacing was also made to depend upon the fire hazard in some places. The corner location is considered preferable because of the availability of fire service upon the fronts of two sides of a block, and since less friction exists and a correspondingly greater quantity of water is available. Some men advocate hydrants on opposite corners of an intersection where conditions are deemed special and many point out the advantage of having the hydrant connection just inside the control valve for the block, although one engineer pointed out the desirability of separate hydrant valves.

Every variety of reason was given in favor of a location as close as possible to the curb and against any other place. Extra length of suction hose for the fire engines, obstruction by such hose to the police and firemen during fires, greater difficulty in operating a hydrant wrench in opening the hydrant, etc., are many reasons given against a location close to the building.

The fire department was always given preference as to its opinion with reference to the location, while traffic conditions were considered of less moment. It should be noted in this connection that the questionnaire was not sent out to fire departments or traffic police.

Excerpts from interesting letters were as follows:

From letter of A. H. Kneen, American Pipe and Construction Company, Philadelphia, Pa.

April 18, 1916.

Subsurface Hydrants:[1]

Have you ever used subsurface hydrants?

"No, but very common in Europe. Their location is marked on the side of buildings and they are always placed according to a definite and easily perceived plan. Paris is a good example."

If so, with what success?

If not, what is your idea about them?

Answers to both queries to include comparison with the supersurface type as to

Cost of installation.

"Less."

Cost of maintenance.

"Less."

[1] or rather like curb and top level with surface.

Time for fire department to make connection.
"No trouble."
Liability to become frozen.
"Real objection."
Difficulty of identifying location of by fire department.
"Always on sidewalk at same exact relative position."
Accidents to those stumbling over them.
"None."

From letter of H. B. Machen, Borough Engineer, The City of New York, Department of Water Supply, Gas and Electricity.

April 26, 1916.

Question 1—Have you ever used subsurface hydrants?

In 1910 there were four subsurface hydrants of record in the borough of Manhattan, New York City. As fire hydrants they were not successful and were not used by the fire department due to lack of knowledge as to their location. In the course of general cleaning up of the water supply system the subsurface hydrants were removed and hydrants of standard type placed in their stead. In winter time these hydrants might be out of service due to the fact that the cover could freeze tight; water might collect under the cover and freeze the nozzles and caps into a mass of solid ice. Snow might cover the walk, necessitating clearing of same to obtain access to the hydrant.

It would be necessary to have indicator sign attached to a building to show where subsurface hydrants were located. In many streets where large plate glass windows are the rule, there would be no available space to attach indicator unless put up as high as the second story of the building.

A properly designed subsurface hydrant should not cost any more to install or to maintain than hydrants of the standard type.

There is no danger of a pedestrian stumbling over a hydrant cover if it is properly designed to set flush with the walk.

A standard hydrant requires a clearance from the face of the curb of about 14 inches in order that the hubs of the passing vehicles will not interfere with the nozzles. The barrel of the hydrant is about 8 inches in diameter. The obstruction on the sidewalk is therefore 22 inches. A subsurface hydrant occupies a space about 3 x 3 feet set 6 inches back from the face of the curb but does not interfere with traffic.

From letter of James W. Armstrong, Filtration Engineer, Water Department, City of Baltimore, Maryland.

April 28, 1916.

In answer to your questionnaire of April 13, in regard to hydrants, I beg to say that subsurface fire hydrants have never been used in connection with the distribution system of the water department of this city and we therefore have no data or means of making a comparison between them and the regular hydrants. However, the fire department of this city installed a high pressure system throughout the business section and placed a large number of subsurface hydrants in connection with the same and so far as I know, they have been entirely satisfactory on that service.

From letter of Allen Hazen, Consulting Engineer.

April 18, 1916.

I am glad to see that you have up the question of subsurface hydrants. Such hydrants were formerly used in Lawrence, where I first lived after my school days, and in a number of other New England mill towns. I remember warm discussions as to their relative merits. I did not take part in these discussions, but was frequently present, and there were warm partisans on both sides. The post hydrants finally won out, as I remember it, solely on the ground that they were more easily found after snowstorms. The old hydrants were directly over the mains in the streets. Every hydrant was referenced and after every snowstorm men had to go around and dig out the top of the pit in which the hydrant was located, and failure to have this work done on some critical occasions resulting in delay to get the water, was, I think, principally responsible for the final shift in the system. This is an old recollection on my part and is to be taken in general terms only, as I was not a party to the transaction and my recollection after so many years may not be exact.

To come to modern times, I have found hydrants of this same general type in use in Australia and other warm places where the water works have been laid out by English engineers. The advantages of hydrants of this type where snow does not exist are so great that I have often wondered why someone did not take this up and get a modern up-to-date design of a hydrant something like that used in Australia, or like that used in Lawrence in the old days. It would seem to me that such a hydrant would be better than the post hydrants in many respects, and especially where the snowfall is not heavy and where there is not much frost to contend with. This would include all the cities on the Pacific Coast, Honolulu, Panama and all Southern cities. The use of American hydrants fitted with frost boxes in Honolulu and Panama has been a source of amusement to many visitors.

For discussion of the old Lowrey hydrants and their relative merits and disadvantages, I would suggest a study of water works and engineering literature, say from 1890 to 1895, that being my recollection of the time when the discussion was most active.

From letter of Thomas H. Hooper, Operating Superintendent of Water Works, Winnipeg, Manitoba, Canada.

May 11, 1916.

The only style of subsurface hydrant in use in this city, Winnipeg, was the ball type of hydrant. It was discarded many years ago for loss of time installing stand pipe and on account of frequent leaks at ball valve and for reasons stated below:

The cost of installation is in favor of subsurface as compared with supersurface.

The cost of maintenance is about the same.

The fire department can make connection to supersurface much more speedily than to subsurface.

The liability to become frozen depends very largely on the system of inspection during the cold weather. In this city during the winter months the sidewalks are generally covered with snow which would cause consider-

able loss of time in identifying location of sub-surface hydrants. The super-surface hydrants now in use, after a big snowstorm have to be dug out as the snow buries them.

No accidents have ever occurred from people stumbling over hydrants, as they stand on an average about two feet six inches above the walk.

Hydrants in this city are the only sidewalk encumbrances.

From letter of Francis T. Cutts, Assistant Water Commissioner, City of St. Louis, Department of Public Utilities, Water Division.

May 15, 1916.

Subsurface hydrants have been used in St. Louis very extensively. At the time that they were installed, there was also in use a post type of hydrant, both the post and subsurface hydrants require a box or vault around them. This requirement made the cost of installation and maintenance about the same for each type. There are no records to indicate that there was any particular delay to the fire department in making connection to an underground hydrant more than to a post hydrant, except in severe weather when it might become necessary to loosen the cover. This, however, was never a serious matter, and was usually done by hitting it a sharp rap with the shovel or pick handle. One of the serious objections to this type of hydrant was the necessity of frequent cleaning after deep snows and the difficulty that the fire department experienced in locating the hydrants promptly, especially where they were placed in unimproved portions of the city and in lumber yards, etc. It was frequently the practice to bury a small piece of cast iron pipe along side the hydrants so as to prevent teaming over them and also to assist in locating them. The serious accidents resulting from people stumbling over the hydrants were few and far between and only occasionally was the city called upon to defend a suit brought about by an accident of this kind. It is difficult to state the proportion of hydrants to the total sidewalk encumbrances, but as a general proposition other encumbrances greatly outnumber the hydrants.

From letter of W. C. Hawley, Chief Engineer and General Superintendent Pennsylvania Water Company, Wilkinsburg, Pa.

April 18, 1916.

Replying to the inquiries accompanying your note of the 13th instant would say that I have had no experience with subsurface hydrants and therefore am unable to answer any of the questions regarding them which you have asked. They may be satisfactory in the thickly built up portions of a large city, but I would not favor them for residence districts or for smaller cities or towns. There are too many times when sleet, snow and ice would render them sufficiently inaccessible to cause serious waste of time in case of fire.

From letter of C. R. Henderson, Manager, Davenport Water Company, Davenport, Iowa.

April 22, 1916.

Contrary to the best practice, hydrants are used very extensively for municipal purposes other than fire extinquishment. Independent valves are

connected to hydrant nozzles and pressure is left on at nozzles during the months of the year when water does not freeze. These are used for street sprinkling and street flushing, sometimes for construction work.

From letter of A. Prescott Folwell, Editor Municipal Journal, New York.

April 21, 1916.

Given a post hydrant, it seems to me that the best longitudinal location depends upon the arrangement of the city. In a residence section where there are alleys, a fire hydrant near the center of the block and alley corner would be furthest from any interference with its use by burning buildings, and would be convenient for fighting the fires from the rear and side. On the other hand, fire hydrants at the street corners are most convenient for reaching the fronts of buildings but would be near the fire should a corner building burn. If placed directly at the corner of the curbs, the hydrant is in a position of greatest danger of accident from trucks and other heavy vehicles. Anywhere between there and the property line extended, the hydrant is likely to be in the way of pedestrians. My own opinion and experience have been that, except for residence sections with alleys, the best location for the fire hydrant is along the curb just back of the extension of the building line. I have usually placed the water main valves on the building line extension. As to lateral location; from the point of view of the fire department, I presume the curb is undoubtedly best, especially for the steamer connections. Most steamers do not carry a suction long enough to run across the sidewalk when the engine is in the roadway. On the other hand, a fire hydrant either recessed in the building, or immediately against the walls is the least obstructive to traffic, while the heat of the building would tend to prevent freezing of the hydrant. But if this building itself be on fire, it might be impossible to maintain any hose connection with the hydrant, and the collapse of the walls would be likely to put it out of commission and probably break the connection.

CONCLUSION

It is believed that this question of the relationship of water works design and construction to other elements of city planning is well worthy of further investigation, and it is hoped that sufficient interest will be demonstrated by the membership to lead to the continuation of the committee for another year so that it may amplify the work already done and develop new fields.

PRESIDENT HILL: Gentlemen, we are peculiarly indebted to Mr. Goodrich for having undertaken this work this year. It seems to the chair that the general field of city planning opens up an entirely new vista for the water works engineer; and that this Association should lend its aid and support to a general broad economic plan of developing all city work. No doubt if figures could be obtained

showing the great loss in this country resulting from haphazard city work due to the lack of coördination between city departments, that these losses would run up into millions, and possibly billions of dollars; not only that, results may be achieved through which our cities may be made more beautiful and our homes more attractive and our environments more conducive to pleasant living. Let us hope that this is only the beginning of a keen interest in this subject on the part of this Association.

MR. ALLEN HAZEN: The speaker is very much pleased to have heard Mr. Goodrich define the scheme of the combined use of watershed lands both as a source of water supply and as parks. It is something that he has been advocating for years. There is a great deal of merit in it. It has received some consideration by American cities. It deserves a great deal more.

There is another opportunity for combination which would be useful in many cities. Some of our cities are built in valleys, and when these become flooded there is a great deal of damaged property, and very large expenditures are necessary to protect such valley cities from devastation. If the lower parts of those valleys could be taken for park purposes, and people kept from building permanent structures in them, it would also provide a flood channel and would solve some troublesome problems.

The proposal to use subsurface hydrants in city streets in place of post hydrants is also interesting, because the speaker happens to have spent five years in a town where subsurface hydrants were used, and there was much discussion heard as to their merits and disadvantages. Post hydrants were finally adopted solely on the score of the convenience of finding them after a snowstorm and for no other reason. Now the underground hydrant certainly has advantages. The speaker has seen a great deal of underground hydrants in Australia designed by British engineers, and in other parts of the world, and is quite enthusiastic about their merits. They could be used in a large part of the United States, especially on the Pacific Coast. The advantage of that kind of a hydrant is so great that it ought to be adopted in many cases. There is no American

hydrant of this type made so far as the speaker knows:[2] and he most earnestly urges upon our associate members the desirability of constructing hydrants along the line of the British design that will give us a good working design for underground hydrants that can be used in the South and along the Pacific Coast, and wherever there would be no trouble from snow or severe frost.

MR. J. M. DIVEN: One objection to subsurface fire hydrants at street intersections that has not been brought out is the obstruction to traffic caused by removing the snow from the hydrant covers at such places. It would leave a bare spot in the middle of the street intersection, and if the snow was deep a considerable depression, one deep enough to be dangerous to traffic. Probably in uncovering the hydrants after a snow fall, the snow would be piled up about the hole made to find the hydrant, thus increasing the danger to traffic. Such excavations might possibly be made with long sloping sides and thus avoid the dangerous hole at the street intersection; but the chances are that in the hurry to clear the hydrant the snow would be disposed of in the easiest and quickest possible manner, that is, piling it up as near the hole as possible.

On motion of Theo. A. Leisen the report was accepted, ordered printed in the JOURNAL and the Committee continued.

THIRD SESSION, WEDNESDAY MORNING, JUNE 7, 1916

The Convention met pursuant to adjournment, President Nicholas S. Hill, Jr., in the chair.

Mr. Clarence R. Knowles, Superintendent Water Department, I. C. R. R., Chicago, Ill., presented his paper on "Prevention of Water Waste on Railroads," illustrated by lantern slides (published in June JOURNAL), which was discussed by Messrs. Diven and Carleton E. Davis.

Mr. Mark Wolff presented his paper on "Interpretation of Water Works Accounts," Illustrated by lantern slides (published in June JOURNAL), which was discussed by the following: Messrs. Allen

[2] The speaker has since been informed that one or more of our Associate Members have made subsurface hydrants for use in Cuba and Mexico, but except the old Lowrey hydrants used many years ago and now discarded, he has never found subsurface hydrants in ordinary use in the United States or even in the tropics in Hawaii and Panama.

Hazen, F. T. Kimble, W. E. Miller, W. Z. Smith and C. B. Salmon.

Mr. J. N. Chester, H. E. and M. E., Pittsburgh, Pa., read his paper on "Pumping machinery, Test Duty Versus Operating Results" (published in June JOURNAL), which was discussed by President Nicholas S. Hill, Jr., W. F. Wilcox, J. W. Alvord, Allen Hazen, H. G. H. Tarr, Harry Ellsworth, Dabney H. Maury, and S. B. Applebaum.

The Chair called for the report of the Committee on Stream and Lake Pollution, Mr. Theodore A. Leisen, General Superintendent, Detroit, Chairman, in response to which Mr. Leisen stated as follows:

We have no report to present at this meeting, finding it impossible to get together and get a report that would be worth while presenting at this meeting, we ask that an extension of time be given us so that the report can be prepared in the comparatively near future, and published in the JOURNAL at the earliest possible date.

On motion of Mr. Maury, the Committee on Stream and Lake Pollution was continued with instructions to report as early as possible.

ELECTION OF NOMINATING COMMITTEE AND SELECTION OF 1917 CONVENTION CITY

The Chair read from the constitution the provisions relative to the election of Nominating Committee and representation thereon from the various Sections, and proceeded to call for nominations from the respective sections.

The following named were elected as the nominating committee, to nominate officers to be elected by ballot, for the year commencing with the close of the next annual convention.

For the New England States:

George W. Batchelder, Worcester, Massachusetts.

For the Middle States:

George A. Johnson, New York City.

For the Central States:

Frank C. Jordan, Indianapolis, Indiana.

For the Southern States:

E. E. Wall, St. Louis, Missouri.

For the remainder of the United States and all outside territory:

H. Hymmen, Berlin, Ontario, Canada.

SELECTION OF 1917 CONVENTION CITY

The Convention then proceeded to the selection of the next place of meeting. The chair called for the Report of the General Committee of Arrangements as to cities available, which was submitted by Mr. Theodore A. Leisen, as follows:

REPORT OF JOINT COMMITTEE OF ARRANGEMENTS

The Joint Committee on Arrangements of the American Water Works Association and Water Works Manufacturers Association respectfully report that this body has received invitations to hold its Convention at the following places: Baltimore, Birmingham, Cleveland, Columbus, Detroit, Philadelphia, Portland, Oregon, Providence, R. I., Richmond, St. Louis.

Of the places listed only three—Birmingham, Richmond and St. Louis—have substantially supplied all of the information requisite for your committee to determine upon the adequacy of the facilities offered, reasonableness of rates, etc. From the viewpoint of the advantages to be gained from increased membership, points of engineering interest, Birmingham and St. Louis more nearly satisfy the requirements of this Association.

N. S. HILL, JR.
THEODORE LEISEN
J. M. DIVEN,
American Water Works Association Committee.

D. F. O'Brien,
JAS. H. CALDWELL,
CHAS. R. WOOD,
Water Works Manufacturers Association Committee

The several cities were placed in nomination in short speeches by their respective advocates, and on the second ballot the choice fell to Richmond, Virginia, that city receiving a majority of all votes cast.

TRIP TO KENSICO DAM

For Wednesday afternoon the Department of Water Supply, Gas and Electricity, the Board of Water Supply of the City of New York, and the active members of the American Water Works Association in the New York Section territory, tendered to members and guests and the ladies a trip to the Kensico Dam.

A special train left the Grand Central Station at 1.30 p. m. for Valhalla Station on the Harlem Division of the New York Central Railroad.

While the weather conditions were not all that might have been desired, the afternoon was spent pleasantly in this manner.